PIT AND QUARRY

JANUARY 1952

In this Issue . . .

Reviews and Forecasts of the Nonmetallic Minerals Industries • The Construction Picture • Programs of N.S.G.A., N.R.M.C.A., N.C.S.A., and N.C.M.A. Annual Conventions Tennessee Agstone Plants • Idaho Portland Cement Co. Plant • Cement Dust Nodulizing

Carriers Like These Move 8,000,000 Tons of Limestone and Ore Annually to U.S. Steel Works at Gary.

Table of Contents, Page 74

MACK TRUCKS

Keep Pace...

WITH YOUR STEPPED-UP PRODUCTION

Today's conditions call for trucks that can keep pace with accelerated production schedules. More and more truck owners are realizing that trucks are really "Tools of production"... that intensified service makes doubly important the extra durability and sustained reliability they get from hard-working Macks.

Make sure *your* truck equipment measures up to the rigors of present-day demands. See your nearest Mack branch or distributor for the right truck for your particular job. Prove to your own satisfaction that "Built Like A Mack" means uninterrupted production... extra long life... more tonnage moved at lower cost for many years to come.

Mack TRUCKS

outlast them all

Mack Trucks, Empire State Building, New York 1, N. Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.

In punishing earth-moving and open-pit service, hard-working Mack trucks have won enthusiastic owner acclaim because of their ability to "keep pace" with stepped-up demands... to keep heavy loads moving on dependable, time-saving schedule. This Mack Model A-505 works at an elevation of 12,500 feet for C. Ryan & Sons operating in Climax, Colorado.

What's the toughest job you've got?

THAT'S what these massive Goodyears are for —the toughest, roughest jobs.

Reason: Each Goodyear tire is designed specifically to give maximum performance on a particular type of hauling. So when you choose the right Goodyear work tire for your job, you get longer tire life at lower cost per yard.

The fact is, more tons are hauled on Goodyear tires than on any other kind because more and more pit and quarry operators are finding from experience that it pays to BUY and SPECIFY Goodyear!

HARD ROCK LUG

Super-tough champ for all types of rock work. Its armored carcass and extra-heavy lugs assure more wear, better performance, even in toughest going.

HARD ROCK RIB

Companion tire for front wheels in rock work — easier steering, smooth rolling, same cord body, same shoulder and sidewall as Hard Rock Lug.

ROAD LUG

Dual-purpose tire operates both OFF and ON the road. Combines off-the-road toughness and traction with on-the-road mileage and economy.

GOODYEAR

We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Network

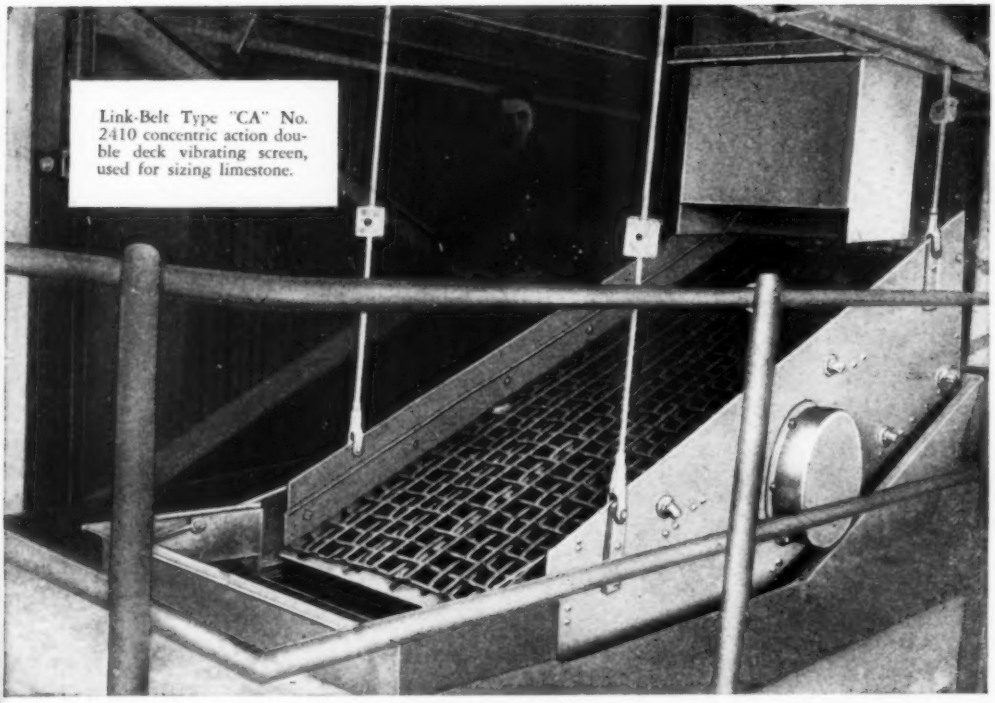
Road Log—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

PIT AND QUARRY, January, 1952, Vol. 44, No. 7. Published monthly by the Complete Service Publishing Company, 431 South Dearborn St., Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy 50 cents. Entered as second-class matter February 28, 1922, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

No matter what your screening requirements . . .

the BETTER WAY is with CA

Concentric Action Vibrating Screens

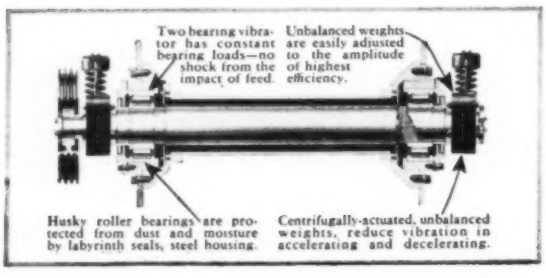


Link-Belt Type "CA" No. 2410 concentric action double deck vibrating screen, used for sizing limestone.

FOR accurate sizing . . . for thorough rinsing . . . for rapid dewatering—you can't beat the Concentric Action of Link-Belt's CA Vibrating Screens.

Flexible, rugged, efficient, economical—on all counts Link-Belt has more than matched top screening standards. Exactly what you would expect from the top name in the field of materials handling.

Link-Belt CA Vibrating Screens are available from 3 x 8 to 6 x 16 ft., single, double and triple deck, suspension or support mounted. Remember, when it comes to materials handling, profitwise operators come to Link-Belt.


Two bearing vibrator has constant bearing loads—no shock from the impact of feed.
Unbalanced weights are easily adjusted to the amplitude of highest efficiency.
Husky roller bearings are protected from dust and moisture by labyrinth seals, steel housing.
Centrifugally-actuated, unbalanced weights, reduce vibration in accelerating and decelerating.

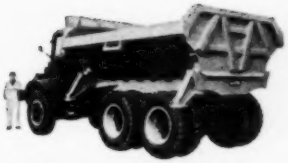
WRITE FOR BOOK 2354
for complete layout data

LINK-BELT

VIBRATING SCREENS

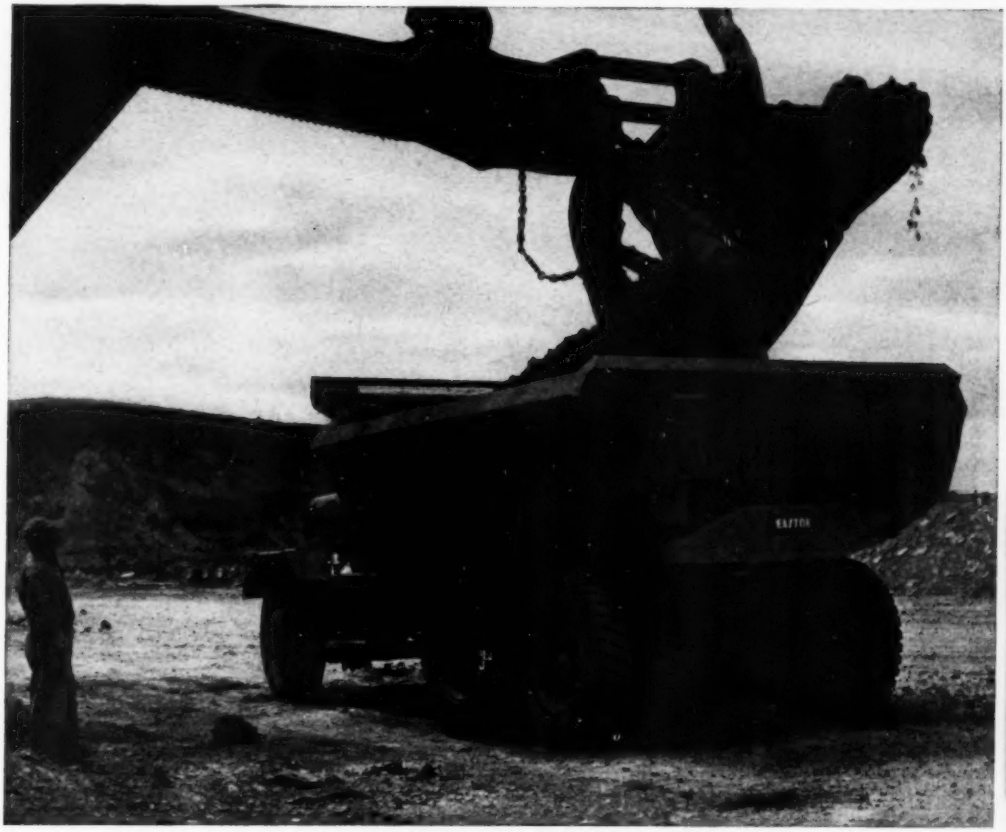
LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in principal cities. 12,428-A

BD-1118H Body with AUTOCAR



BP-1114 Body with MACK

TL-1530 Trailer with EUCLID



EASTON TYPE BD off-highway truck bodies give you all of the advantages of side-dumping...the big, wide, easy target for loading...the fast, *roll up, dump, roll on* cycle...easier, accurate spotting...wide, unobstructed discharge...better all around control...and the rugged, rock-proved EASTON construction! Combined with all the speed, power and economy of the truck chassis of your choice, this hydraulic side-dump EASTON body helps you to get extra production at lower cost. The standard Type BD truck body is built in capacities from 15 to 30 tons for earth, rock and ore. For information outline your requirements to: **EASTON CAR & CONSTRUCTION COMPANY, EASTON, PA.**

EASTON SIDE-DUMPS

B-1090

This rugged job... required rugged Air Compressors

1. **THE JOB:** eliminating grading and sharp curves which necessitated removing 100,000 yards of rock. *Time:* approximately 55 days. *Location:* 2½ miles of road construction on Route 100 to the new extension of the Pennsylvania Turnpike.

2. **EQUIPMENT USED:** a 600 Schramm and two 315 Schramm Air Compressors, operating four Wagon Drills.

3. **CONTRACTOR:** C. W. Good, Lancaster, Penna. He comments: "The rock to be removed was extremely hard, a composition of Brandywine Granite and Limestone... but with Schramm Air Compressors and Wagon Drills on the job, we had no trouble keeping ahead of schedules."...

   And:

   "I can get the best performance out of Schramm Air Compressors... no loss of time for repairs, and, when replacements become necessary the interchangeability of parts on all Schramm Compressors has simplified the servicing irregardless of size or capacity."

Schramm Air Compressors range in size from 20 to 600 cu.ft. actual air delivery—for your specific requirement.

For full details write for free Schramm Booklet.

SCHRAMM, INC.

The Compressor People

WEST CHESTER **PENNSYLVANIA**

SCHRAMM AIR COMPRESSORS

Why the NORTHWEST

is a BETTER MINING SHOVEL!

BETTER TRAVEL

The Northwest Steering is smoother—easier on operator and machine with *positive* traction on *both crawlers* while turning as well as when going straight ahead.

BETTER CONTROLS

The "Feather-Touch" Clutch Control gives easy operation. It is free from complications or sensitive mechanism. No special servicing is ever required and manual control can be had on the instant.

BETTER SWING CLUTCHES

Uniform Pressure Swing Clutches that grip easily, are free from jerks and grabs that make spotting the load difficult and waste digging time.

THE Northwest is a real Rock Shovel proved in hard rock work. Greater simplicity in design makes maintenance easier. Unusual mobility as compared with other crawler designs saves time clearing for shots. Fast swing and high capacity under many conditions improves output over larger equipment. The Helical Gear Drive gives smooth trouble-free transmission of power. Cast Steel Bases and Machinery Side Frames are ruggedly built and maintain shaft alignment and Ball and Roller Bearings on all high-speed shafts cut power losses to the minimum.

In the Northwest you have a combination of advantages not found in any other shovel size for size—advantages that mean greater output and lower cost operation.

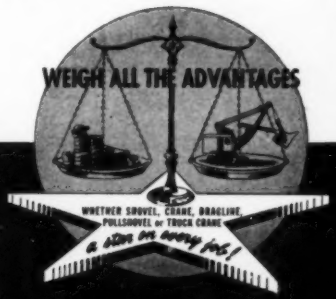
BETTER CROWD

The Northwest Dual Independent Crowd utilizes force most other independent crowds waste assuring the handling of tough digging with greater output.

CUSHION CLUTCH

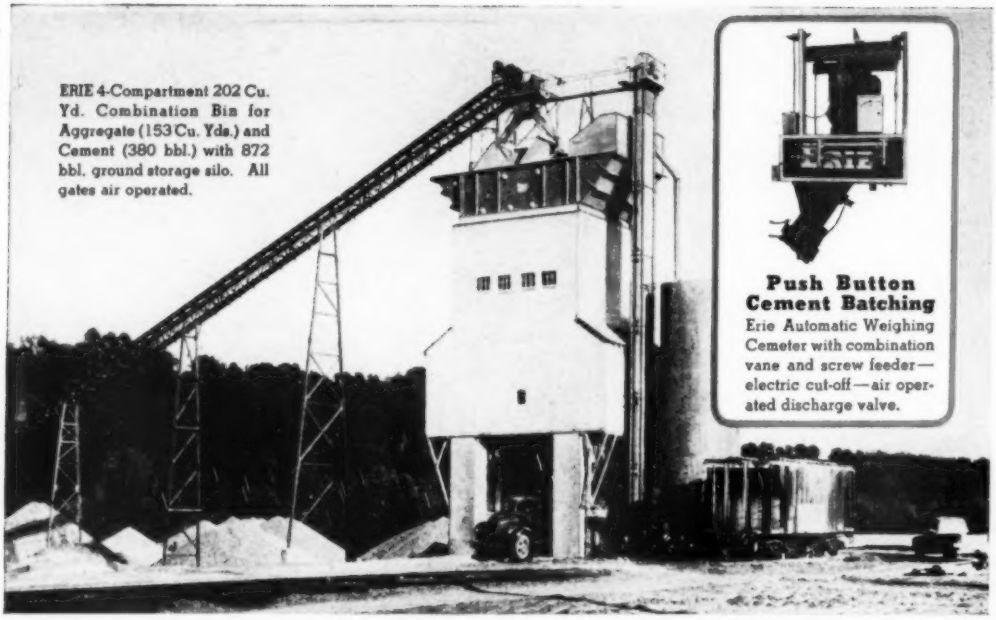
Reduces shock overloads of heavy digging before they can damage machinery.

NORTHWEST ENGINEERING COMPANY
1515 Field Building • 135 South LaSalle Street • Chicago 3, Illinois



NORTHWEST

Convertible for any Mining Material Handling or Excavation Problem



ERIE 4-Compartment 202 Cu. Yd. Combination Bin for Aggregate (153 Cu. Yds.) and Cement (380 bbl.) with 872 bbl. ground storage silo. All gates air operated.

Push Button Cement Batching

Erie Automatic Weighing Cemeter with combination vane and screw feeder—electric cut-off—air operated discharge valve.

AN ERIE *High Speed* CENTRAL MIXING PLANT

Crane transfers sand and stone from river barge to stock piles. Tunnel belt conveyor under stock piles is loaded by push button air operated gates. A control panel, located on the ground near the junction of the tunnel and inclined belt conveyors, flashes the high and low bin signal lights to guide operator in directing proper material from stock piles. The material level in the 4-Compartments is automatically maintained within a set high-low range.

BATCHING OF CEMENT AND AGGREGATE IS FAST AND ACCURATE

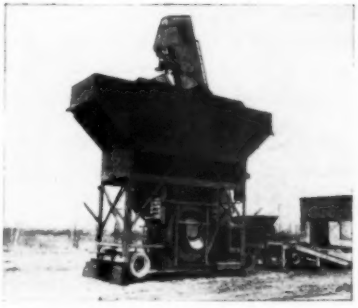
ERIE 2 Cu. Yd. AggreMeter with hand controlled air operated charging and discharge gates—3 Beam Scale with over and under dial.

ERIE Cemeter with 2 Beam Scale and electric cut-off weighs cement automatically—hand controlled air operated discharge valve. Cement and aggregate is discharged into 2 -2 Cu. Yd. Mixers with a yield of 100 to 125 Cu. Yds. of concrete per hour under rigid inspection.

DIG MORE *and* FASTER

ERIE Clamshells are carefully designed to eliminate useless deadweight. They are available in 4 types—Rehandler—General Purpose—Barge Type and Hard Digger. Each in a complete range of capacities to provide the correct bucket for crane—job and material. Write for Cat. 2L-2.

We Doubled the bin capacity in the ERIE Portable Concrete Plant. It now holds 40 cu. yds. This reduces frequency of truck deliveries of aggregates and keeps material always in good supply. Investigate the economy of making 30 to 40 cu. yds. per hour of specification concrete on the job. An auxiliary bucket hoist is also available to speed concrete to forms or truck. Write for catalog. Describe your concrete job.

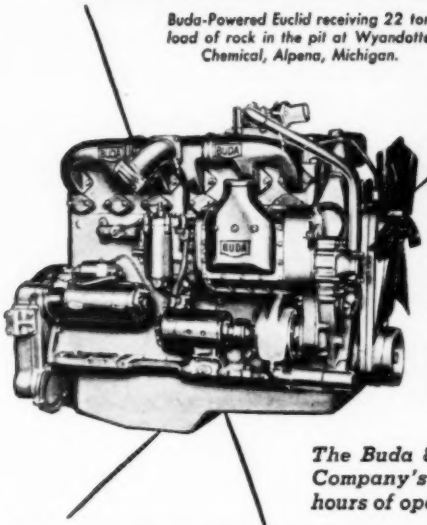


ERIE

STEEL CONSTRUCTION COMPANY

621 GEIST ROAD • ERIE, PENNSYLVANIA

14 BUDA SUPER Diesel-Powered "EUCS" Average 16 hrs. per day for 4 Years* *WITHOUT MAJOR OVERHAULS!*



Buda-Powered Euclid receiving 22 ton load of rock in the pit at Wyandotte Chemical, Alpena, Michigan.

The Buda 844 Super Diesels powering Wyandotte Chemical Company's 14 Model TD-14 Euclid trucks averaged 17,280 hours of operation over a 4 year period without major overhaul.

Buda Diesels provide high travel speeds for faster round trips.

Dependability like that, coupled with low operating cost . . . minimum maintenance and less downtime make Buda Diesels a good bet for any operator. Buda Diesels are giving mine operators more horsepower hours per dollar . . . more power . . . greater lugging ability and faster round trips under the toughest job conditions. Ask your nearby Buda Distributor for details on Buda dyna-swirl Diesels' outstanding performance on mine hauls like yours. Write for Bulletins and data today.

The Buda Company, Harvey, Illinois

**Work season—April through November.*

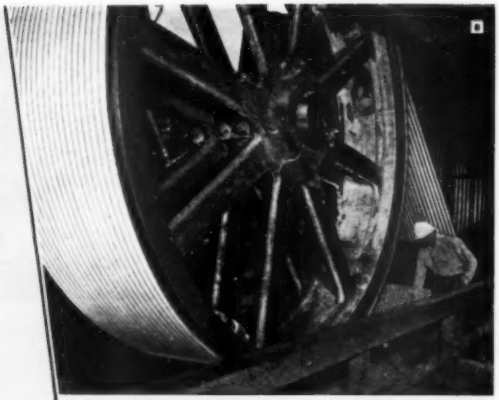
BC-12

BUDA — *a Power-Full and Dependable Name in Engines*

BUDA COAST TO COAST FACTORY EXPERIENCED SERVICE AND PARTS

Manufacturers of Diesel and Gasoline Engines, Railroad Products, Lifting Jacks, Earth Drills and Material Handling Equipment

Prove for yourself why Gates Vulco Ropes are giving you longer V-Belt Wear!



Gates Vulco Ropes very competently handle the drive on this immense Jaw Crusher, said to be the largest ever built. It supplies most of the coarse rock for rip rap—and for secondary crushing—on the Detroit Dam project, Detroit, Oregon.

There is a very simple reason why Gates Vulco Ropes—the V-belts built with *concave sides*—are giving you substantially *longer wear*—and you can easily prove this for yourself in just 2 minutes' time!

Pick up *any* V-belt whatever and bend it as it bends when going around a pulley. As the V-belt bends, grip its sides with your fingers—and here is what will happen, every time.

If the belt you are bending is a *straight-sided* V-belt, you can *feel* its sides *bulge out* as the belt bends. This out-bulge forces the sides of the belt to press *unevenly* against the V-pulley—as shown in figure 1-A (see accompanying diagrams).

Clearly, this *uneven pressure* against the V-pulley causes the belt to wear *unevenly*—with the wear *concentrated* where the bulge is greatest—and this concentrated wear at one point naturally shortens the life of a *straight-sided* V-belt.

Now, make this same test with the belt that is built with Concave Sides—the Gates Vulco Rope!

Whereas you felt an *out-bulge* when you bent a belt with straight sides, you find that the *Concave Sides* merely fill out and become *perfectly straight*. The sides therefore *press evenly* against the V-Pulley. This distributes the wear *uniformly* across the *full width* of the belt. Naturally, this means longer belt life and *lower* belt *costs* for you!

Only V-Belts made by Gates are built with concave sides. Whenever you buy V-Belts, be sure that you get the V-Belt with the Concave Sides—The Gates Vulco Rope!

What Happens When a V-Belt Bends

Straight-Sided V-Belt

Fig. 1

Fig. 1-A

How Straight-Sided V-Belt Bulges in Sheave Groove. Sides Press Unevenly Against V-Pulley Causing Extra Wear At Point Shown by Arrows.

Gates Vulco Rope with Concave Sides

Fig. 2

Fig. 2-A

The Concave Sides Fill out to a Precise Fit in the Sheave Groove. No Side Bulge! Sides Press Evenly Against the V-Pulley—Uniform Wear—Longer Life!

CS-5110

Gates

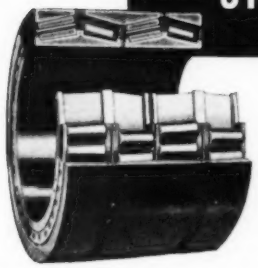
Hose V-Belts Molded Rubber Goods for Industry

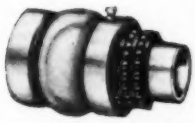
VULCO ROPE DRIVES

ENGINEERING OFFICES AND JOBBER STOCKS IN ALL INDUSTRIAL CENTERS

THE GATES RUBBER COMPANY • DENVER • U•S•A

World's Largest Maker of V-Belts





Solving special friction problems is an everyday job with Torrington. Designing and producing made-to-order bearings has been an important part of our business for years.

This extensive experience has included all types of anti-friction bearings . . . both small and large . . . and for use in virtually every type of equipment. Result: Torrington can give you an impartial recommendation tailored to *your* application.

Whether you are a builder or user of machinery requiring bearings, Torrington engineers will gladly work with you in selecting a standard—or designing a special bearing tailored to your needs.

THE TORRINGTON COMPANY

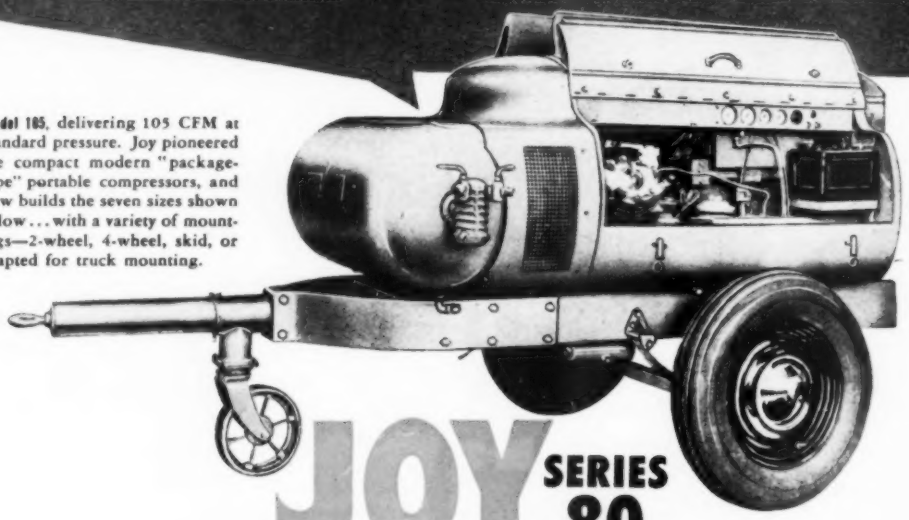
South Bend 21, Ind. Torrington, Conn.

District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON BEARINGS

Spherical Roller • Tapered Roller • Straight Roller • Needle • Ball • Needle Rollers

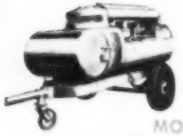
Here's Portable AIR POWER at Lowest Cost and Topmost Efficiency



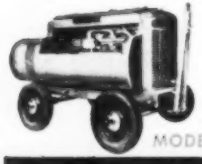
Model 105, delivering 105 CFM at standard pressure. Joy pioneered the compact modern "package-type" portable compressors, and now builds the seven sizes shown below... with a variety of mountings—2-wheel, 4-wheel, skid, or adapted for truck mounting.

JOY SERIES 80 PORTABLE COMPRESSORS

MODEL 60



MODEL 160



MODEL 210

Compare these Features!

- ★ 2 STAGE COMPRESSION
- ★ AUTOMATIC "ECONO-MISER" LOAD CONTROL
- ★ SEVEN SIZES—60 TO 630 CFM
- ★ NOTHING TO MATCH THEM FOR MODERN, COMPACT DESIGN—PORTABILITY—RELIABLE AND EFFICIENT OPERATION

WRITE FOR BULLETINS!

MODEL 315

MODEL 500

MODEL 630

W&O C 2074

Consult a Joy Engineer

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

How do you measure the look in a puppy's eye?

The preliminary precautions have been taken. A well-recommended kennel. A healthy litter. A breed that takes well to youngsters.

Now it's up to the boy to choose.

How will he decide? Perhaps by the look in a puppy's eye.

Chances are, you'll be buying Multiwalls soon again. You've done as every good buyer does. You've considered the reputation of the various suppliers. You've investigated the quality of their product. You've set down your specifications to the last fraction.

Now you pause to think again of the fellow who will make the final choice—your customer. How will he decide? One consideration may well be "the look in a puppy's eye." To say it another way, the sales appeal of your package.

Men who know Multiwalls . . . who buy more than 85 per cent of all Multiwalls made . . . give great weight* to good printing and design.

Union's art directors have concentrated experience. They know how to give your Multiwall package the look it needs to stand out among competition. Volume purchasers of Multiwalls recognize this. They are calling on Union for a greater share of their Multiwall needs.

More so every day . . .

IT'S UNION FOR MULTIWALLS

TRADE MARK UNION

*August, 1951 research study.

UNION BAG & PAPER CORPORATION • WOOLWORTH BUILDING, NEW YORK 7

"To E.B. or not to E.B.?"

. . . That, as the late Mr. Shakespeare might have put it, is the $64 question!

"Should I shoot from the *bottom* of the holes with electric blasting caps (E.B.'s), or shoot from the top?" asks the blaster.

"Judging from that Atlas book of machine-gun blasting photos, shooting from the bottom with the Atlas ROCKMASTER® System could give better breakage—more control and less backbreak, too. It's a fact that along with containing the explosives force and keeping it working on the burden, blasters get a reduction of noise and vibration with the ROCKMASTER System.

"Safety? Underground coal miners use more E.B. caps than anyone else. And they *tamp* the dynamite while the caps are in the hole.

"Sure, there are places where you *should* shoot from the top—if you *want* throw or want to *lift* the top out of the way, as in ditching and some tight work. But most mine, quarry and construction men want to break up the rock and pile it for the shovels.

"The Atlas machine-gun camera book is right. ROCKMASTER confinement of explosives energy gets more well-broken rock per dollar, and reduces noise and vibration."

With ordinary blasting: Geysers of wasted gas . . . unnecessary throw

With ROCKMASTER blasting: Explosives gas confined . . . controlled action

ATLAS EXPLOSIVES *"Everything for Blasting"*

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

How good are you at selecting Wire Rope?

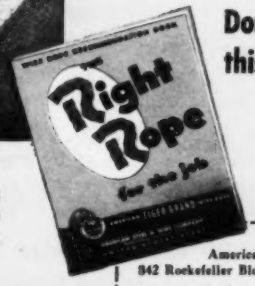
The right choice may save you 25% to 50%

● For every job, there are a number of possible choices of wire rope — but there is usually one best choice. *The wrong choice may cut your wire rope service in half.*

Our new book, "The Right Rope for the Job" gives a complete listing of the correct rope to use for each application in a wide variety of industries. This information, prepared by experienced wire rope engineers,can definitely help you reduce your wire rope costs.

If your particular conditions are not covered, the Tiger Brand Wire Rope Specialist in your area will gladly help you determine the best ropes for your particular needs. It's to your advantage and ours, too, that you get the Tiger Brand Rope that will give you the best service. Send the coupon for a copy of the book and check your choice of ropes.

In the period ahead you will want the best rope you can get—and that's American Tiger Brand.



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TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S AMERICAN TIGER BRAND WIRE ROPE

USS

Excellay Preformed

American Steel & Wire Division
842 Rockefeller Bldg., Dept. H-1, Cleveland 13, Ohio

Please send me your Recommendation Book, "The Right Rope for the Job."

Name..... Position.....

Company.....

Address.....

City..... Zone..... State.....

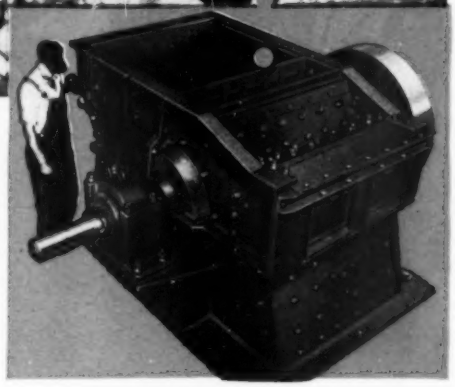
UNITED STATES STEEL

. . . for WILLIAMS SUPER-SLUGGER CRUSHER reducing power shovel stone to 2" or smaller in ONE OPERATION

The Super-Slugger is designed for big reduction jobs, either as regards size of feed or hourly output.

Generally one Super-Slugger will do the work of a primary and several secondary reduction units, eliminating connecting conveyors and additional foundations, drives, etc.

Material is reduced by the Williams Hammer Principle with heavy hammers crushing the material by impact until of proper size to pass through the grate or cage. Eight standard sizes available. WCS1-7



WILLIAMS PATENT CRUSHER AND PULVERIZER CO.
802 St. Louis Avenue. St. Louis 6, Missouri

WILLIAMS ALSO MAKES:

Heavy-duty hammer mills in smaller sizes for all quarry operations; impact and roller mills for 200 to 325 mesh grinding; drier mills; air separators; vibrating screens; steel bins; complete "package" crushing and grinding plants.

WILLIAMS

CRUSHERS GRINDERS SHREDDERS

OLDEST AND LARGEST BUILDERS OF HAMMER MILLS IN THE WORLD

LOADS BIG TRUCKS

The EIMCO 104 loads big trucks easily with rock, sand or gravel. When used in pits, quarries, mines, construction jobs or clearing highways, this flexible fast machine has no equal for low-cost loading.

Repeat orders, from users who have kept accurate performance records, prove the high efficiency of the EIMCO 104.

Price-wise there is no equal — the EIMCO 104 costs only a fraction of the price of heavier, slower moving equipment of equal loading capacity.

The 104 loads at the rate of 4 to 6 buckets per minute with an average load of 1¼ yards per bucketful.

Write for more information on the EIMCO 104.

EIMCO

A168

THE EIMCO CORPORATION

The World's Largest Manufacturers of Underground Rock Loading Machines

EXECUTIVE OFFICES AND FACTORIES — SALT LAKE CITY 10, UTAH, U. S. A.

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IN ENGLAND: EIMCO (GREAT BRITAIN) LTD., LEEDS 12, ENGLAND
AGENTS IN ALL PRINCIPAL CITIES THROUGHOUT THE WORLD

Remove TOUGH CLAY, SOFT ROCK AND OTHER REFUSE FROM any material!

TYPICAL INSTALLATIONS OF McLANAHAN LOG WASHERS

Three pairs of McLanahan Logs in the world's largest phosphate plant in Florida.

New and old type McLanahan Log Washers used here remove clay from cement rock in Pennsylvania.

McLanahan Log Washers removing tough clays from gold ores in Alaska.

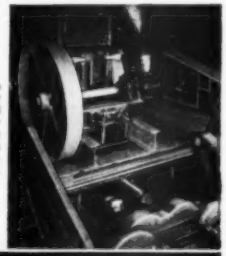
McLanahan Paddle Mill and Log Washer cleaning Texas limestone.

McLanahan Welded Steel Log Washers are smooth running, highly efficient machines for removing tough clays, soft rock and other materials from iron and manganese ores, barytes, zinc, ochre, peat, limestone, trap rock, sand and gravel, phosphate, gold and other ores. These machines remove up to 90% of refuse materials—providing savings that more than pay for the installation in a short time. A few of hundreds of applications are illustrated at right.

Write today for Bulletin WLO 849

Two pairs of 30' McLanahan Logs, used for cleaning sand and gravel in Virginia.

McLanahan Rockmaster Crusher and Log Washer removing tough clays from iron ore in Alabama.



McLANAHAN & STONE CORPORATION
Pit, Mine and Quarry Equipment Headquarters
Hollidaysburg, Pennsylvania

Dependable Products: **Single and Double Roll—and Jaw Crushers, Crushing Plants, Reciprocating Plate and Apron Feeders, Roll Grizzlies, Conveyors, Elevators, Screens, Scrubbers, Steel Log Washers, Sand Drags, Hoists, Jigs, Dry Pans, Dryers, Scrap Bundlers, Pulleys, Gears, Bearings, Sprockets, Sheaves, Rollers, Bin Gates, Elevator Buckets, Gratings, Car Wheels, Ferrous and Bronze Castings.**

Fast facts about a

Fast hauler

The Marquette Cement Manufacturing Company uses this "Cat" Diesel DW20 Tractor with Athey PD20 side dump trailer for hauling overburden from its limestone quarry near Oglesby, Illinois.

On a round-trip haul of about a mile, this rig averages about 115 to 120 cubic yards of pay dirt per hour. Here are the details. From the shovel, there's 1,200 feet of level travel, 100 feet of adverse 7% grade, then 800 feet of level again. On the return, there's 500 feet of favorable 10% grade, 500 feet of favorable 7% grade and 1,200 feet of level. This road is rated at about 40 pounds.

With a 17-yard payload in its trailer, the DW20 leaves the shovel in 3rd gear and rapidly accelerates into 5th. Half way up the 7% grade, it drops back to 3rd. At the top, it shifts into 5th again—and the return trip is made in 5th all the way. Total cycle time is between 9½ and 10 minutes.

Performance like this is typical of "Caterpillar" products. When, after long productive hours, you need service, you can get it on the double from your "Caterpillar" Dealer. He's one of many reasons why it pays to standardize on "Caterpillar" Engines, Tractors, Motor Graders and Earthmovers—he has the know-how and facilities to add extra working hours to your equipment. And, for national defense, that's mighty important these days!

CATERPILLAR, PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

"QUICK-WAY"

Reg. U.S. Pat. Off.

Speeds Output Increases Profits for PIT AND QUARRY OPERATORS

Whether its moving shot rock, sand, or crushed stone, stripping overburden or charging bins, you'll find the "QUICK-WAY" in a class by itself in the ¼ to ½ yard field.

The "QUICK-WAY" features low center of gravity, works easily over the side, has proper balance for truck operation, gives you easy, fast swinging, plenty of reserve power, rugged all steel construction, numerous parts interchangeable. 4 models, ¼ to ½ cubic yard shovel, clamshell, dragline, backhoe, 3 to 10 ton crane capacity. Truck speeds to and from jobs. Low initial cost. Low maintenance costs. Eight different attachments.

With a "QUICK-WAY" you'll roll up yardage records hour after hour, day after day. Ask your distributor for a free demonstration or mail coupon.

"QUICK-WAY" Model E dragline with 30' boom loading gravel

"QUICK-WAY" truck shovel, loading sand

"QUICK-WAY" crane with skull cracker attachment eliminates secondary shooting

Clinker is handled from the pit to the storage pile and from the storage pile to grinding circuit with a mobile "QUICK-WAY" crane

"QUICK-WAY"
TRUCK SHOVEL CO.
Denver, Colorado, U.S.A.

MAIL COUPON TODAY

"QUICK-WAY" TRUCK SHOVEL CO.
Dept. 39 • 2401 East 40th Ave. • Denver 1, Colorado

Please send me complete details on "QUICK-WAY" Truck Shovels —four different models from 3 to 10 ton crane capacity.

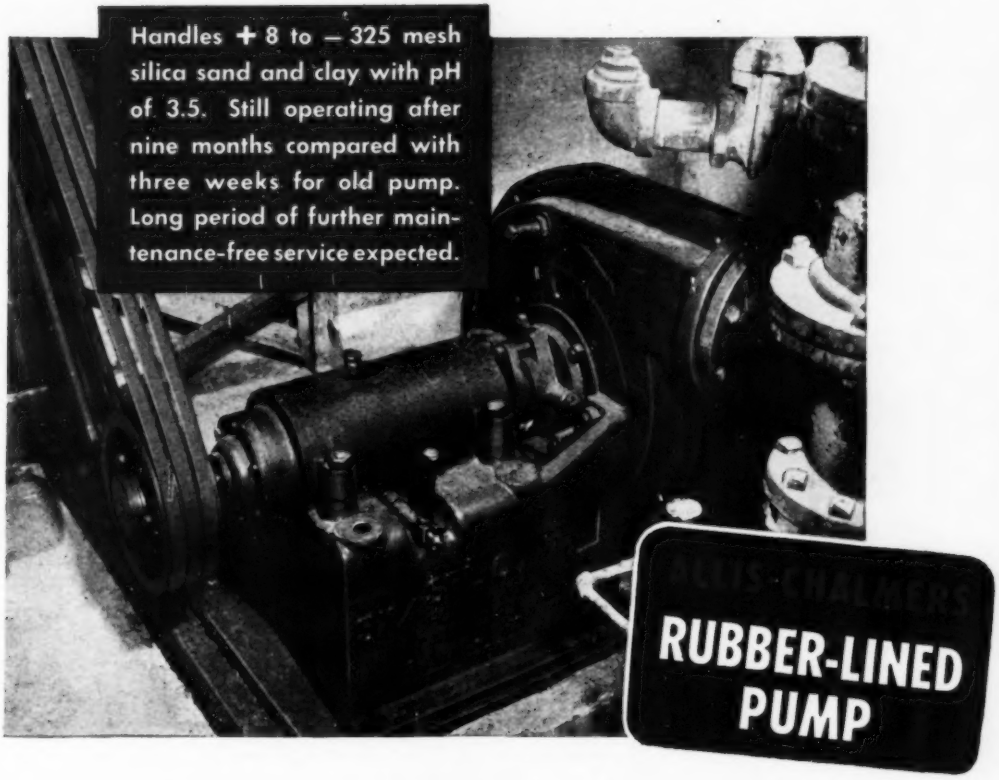
Name _____

Address _____

City _____ State _____

13 TIMES LONGER LIFE

—THAN PREVIOUS PUMP!


Handles + 8 to — 325 mesh silica sand and clay with pH of 3.5. Still operating after nine months compared with three weeks for old pump. Long period of further maintenance-free service expected.
ALLIS-CHALMERS
RUBBER-LINED PUMP

PUMPING WASTE FROM degritting operations in a Georgia clay pit wore out a high grade alloy pump every three weeks. This Allis-Chalmers SRL Rubber Lined Pump has been in operation over nine months without requiring any maintenance due to wear. And wear is so slight that no estimate can be made of its eventual useful life.

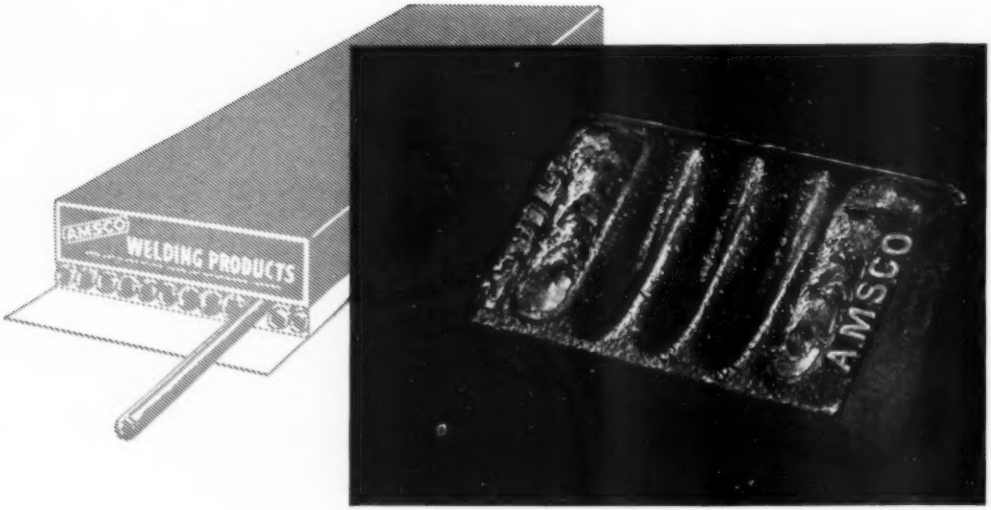
Such reliability and long wear make any pumping operation more profitable and are particularly important in 24 hour, 7 day operations like this one. Up to 50 times the wear life of the highest grade alloy pumps is not uncommon where the Allis-Chalmers Rubber Lined Pump has been used to pump fine abrasive suspensions.

SPECIAL RUBBER COMPOUNDS

Rubber lining compounds are especially engineered for each application. Linings are bonded to separate steel frames and not to the pump body, so they may be replaced without removing the pump from its location. The impeller is equally easy to remove and replace.

If you are pumping fine mesh, hard, abrasive materials (1/8" to 325 mesh size), find out how much more life you will get from an Allis-Chalmers Rubber Lined Pump and how it will reduce your cost per gallon pumped on tough operations. Ask your nearby Allis-Chalmers District Office representative, or write Allis-Chalmers, Milwaukee 1, Wisconsin and ask for Bulletin 08B7311. A-3536

ALLIS-CHALMERS



NOW! Wear your point and have it too!

This new catalog can help you save money on repair costs . . .

It's packed with information on the new "Wear-Sharp"—and the entire AMSCO Weldment line. Complete with installation instructions and helpful hints on welding. Be sure to ask for your free copy.

AMSCO "Wear-Sharps" are available in two quickly and easily installed types:

Crescent Back
For application to worn tooth with minimum fitting.

Straight Back
For application after worn tooth is beveled.

U. S. Pat. No. 2,347,989

New AMSCO "Wear-Sharp" repointer holds a straight edge as it wears . . . and stays sharp longer!

Here's a new tooth repointer that is just what you've been looking for . . . the AMSCO "Wear-Sharp", *and it does exactly what the name implies.*

Note the groove design on this new repointer shown above. The outside and end grooves are AMSCOATED with Amsco Hardfacing Electrodes specially recommended for this purpose, while the inner grooves are left as they are. Result?

The Amscoated grooves wear slower, thus equalizing wear along the entire cutting edge and making the point stay sharp longer. Rounded, blunted corners that cut digging efficiency and waste power are completely eliminated for the life of the repointer!

The "Wear-Sharp" is already setting new records in service life and digging efficiency. For example, an Eastern mine reports *6 times longer service than any repointer ever used before.*

The next time your dipper teeth need repointing, try the new "Wear-Sharp"! Write today for illustrated catalog shown at left—and name of your nearest AMSCO Distributor.

AMSCO WELDMENTS
THE RIGHT WAY TO MAKE REPAIRS

Brake Shoe **AMERICAN MANGANESE STEEL DIVISION**
396 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.
Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

SAFETY
on the Job

Enjoy the satisfaction of knowing that you, too, have taken every safety precaution on your blasting jobs. You can remove many a hazard if you *"Hook Up and Detonate with PRIMACORD."*

Primacord cannot be set off by friction, sparks or ordinary shock — it requires a blasting cap. It is not affected by stray currents.

Safety is not the only reason you need Primacord. Its use means faster, easier loading; positive firing of every cartridge in the hole; better fragmentation in planned shots. It helps to keep your shovels digging with pay dirt in every load.

For further facts, ask your explosives supplier, or write direct

THE ENSIGN-BICKFORD COMPANY
SIMSBURY, CONNECTICUT

Also Safety Fuse since 1836

PLAIN PRIMACORD for shallow holes and surface trunk lines; **REINFORCED PRIMACORD** for deep holes and resistance to abrasion; **WIRE COUNTERED PRIMACORD** for deep ragged holes; **PLASTIC REINFORCED PRIMACORD** for deep, wet holes and river crossings.

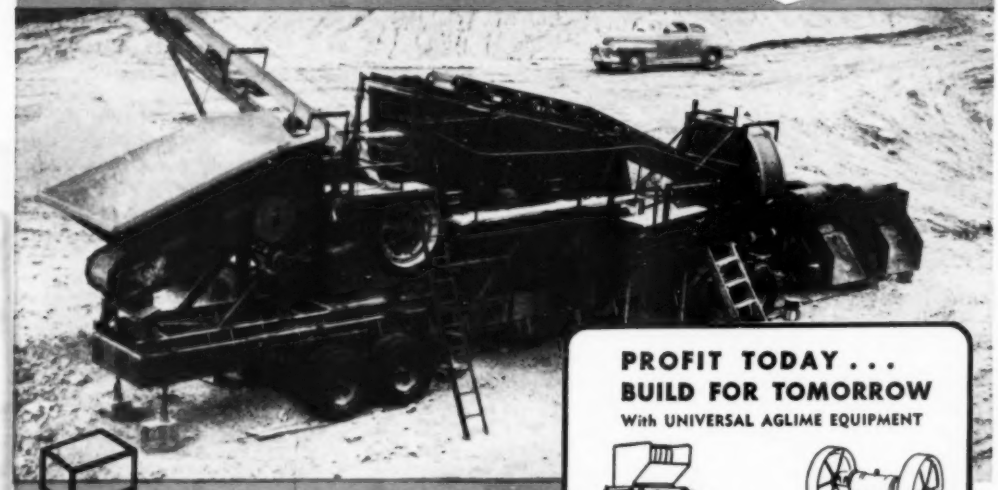
Use PRIMACORD®

The PROVED and APPROVED DETONATING FUSE

UNIVERSAL

FOR PROFITABLE AGLIME PRODUCTION

COMPLETE PACKAGE UNITS



THE UNIVERSAL 293QH LIMEROK
A COMPLETE QUARRY PLANT IN ONE PACKAGE

Here's high portability, extreme flexibility, and profit-making capacity that lets you produce aglime in volume near your market, or shift to road rock when the season changes. The Universal 293QH Limerok is engineered for top output and economy with high capacity jaw crusher primary, hammermill secondary and gyrating screen mounted on a single chassis. It loads direct from quarry and produces aglime, road rock and chips simultaneously or separately. Delivers finished material to trucks or stockpiles. A smooth operating, proved profit-maker.

THE UNIVERSAL 546P PORTABLE PRIMARY CRUSHING UNIT

THE UNIVERSAL 1800 SERIES PORTABLE HAMMERMILL SECONDARY CRUSHING UNIT

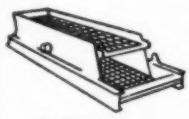
The 546P Primary and 1800 Secondary, available in various sizes, make possible the selection of a balanced combination to meet a wide range of production requirements.

Portable or stationary—whatever your requirements for producing essential aglime UNIVERSAL builds the combination you need for more tons per hour at lowest cost per ton. Contact your Universal distributor for complete information or write direct.

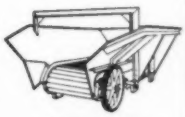
PROFIT TODAY . . .
BUILD FOR TOMORROW
With UNIVERSAL AGLIME EQUIPMENT

Hammermills

Jaw Crushers



Aglime Screens



Apron Feeders

Aglime Conveyors

Aglime Bins

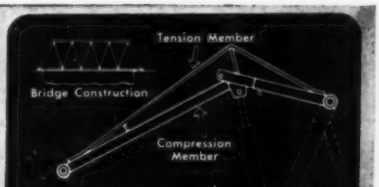
UNIVERSAL ENGINEERING CORPORATION Division of PETTIBONE MULLIKEN CORPORATION

619 C Avenue N.W., Cedar Rapids, Iowa
Phone 7105

4700 West Division St., Chicago 51, Illinois
Phone Spaulding 2-9300

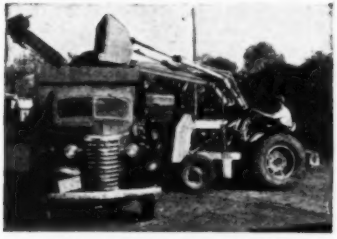
Operators Agree...

There's MORE PAY TIME with a LULL Shoveloader



EXTRA LIFTING STRENGTH

Lull Shoveloaders are equipped with lifting arms of rugged bridge-like construction. They are designed to give maximum lifting strength without bulkiness and to eliminate twisting or swaying even under maximum loads.



LONG FORWARD REACH

Note how the Long Forward Reach of the Lull Shoveloader lets you get in close, handles big loads with ease, and permits minimum maneuvering.

MORE PAY MINUTES as fast hydraulic action and finger-tip control of both lifting arm and bucket saves time in positioning for each operation.

MORE PAY HOURS as longer higher reach ahead of radiator permits faster loading or piling . . . saves hours of maneuvering time.

MORE YEAR 'ROUND PAY TIME . . . digging . . . lifting . . . loading . . . transporting . . . scraping or bulldozing, A wide variety of interchangeable attachments make the Lull Shoveloaders the most versatile equipment you can own to give you *more pay time* with lower costs every day of the year.

Write for PAY TIME FACTS on all of the eight Shoveloader models, each value-packed with exclusive Lull features.

MAIL THIS COUPON TODAY!

LULL Manufacturing Company
3612 East 44th Street, Minneapolis 6, Minn.
Please send illustrated literature on:

LULL SHOVELOADER
AND ATTACHMENTS

Name ..... Title .....

Company .....

Address .....

City ..... State .....

LULL Manufacturing Company
3612 East 44th Street Minneapolis 6, Minn.

Designers and Builders of
The Largest Line of Allied Equipment
for Industrial Wheel Type Tractors

SHOVELOADERS • UNIVERSAL LOADERS • FLUID-DRIVEN SWEEPERS • LULLDOZERS • SHOULDER MAINTAINERS

DEPENDABLE
under severest conditions of dust and dirt!

DODGE-TIMKEN

- Even under layers of grime, dirt and abrasive dust encountered in many production operations, the Dodge-Timken Type C bearing carries its power load smoothly, efficiently, without interruption—because it's
- Triple-sealed to prevent the entry of dust, however fine. Accurately machined steel seals keep dirt *out* and lubricant *in*.
- Dodge mounts, seals, houses Timken precision bearing units in rugged assemblies (four different types) to deliver a minimum of 30,000 hours uninterrupted service.
- Dodge Timken Type C Pillow Blocks are fully self-aligning, with both radial and thrust carrying capacity.
- Delivered fully assembled, adjusted and lubricated, ready to lock on shaft. Locking collars at both ends insure firm fastening.
- Normally available from Dodge Distributors' stocks, sizes from 1-7/16" to 4-15/16".

DODGE MANUFACTURING CORPORATION, 4000 Union Street, Mishawaka, Indiana

DODGE
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER, your local Dodge Distributor for assistance on new, cost-saving methods. Look for his name under "Power Transmission Equipment" in classified phone book.

FIRST IN POWER TRANSMISSION MACHINERY!

V-BELTS AND TAPER-LOCK SHEAVES

TORQUE-ARM SPEED REDUCERS

ROLLING DISC AND DIAMOND B CLUTCHES

SOLID STEEL CONVEYOR PULLEYS

HUDSON A DEPENDABLE SOURCE OF SUPPLY FOR YOUR

MULTI-WALL SACKS

Pasted and sewn valve and open mouth

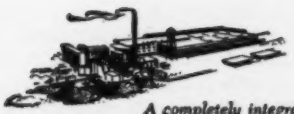
NO MISSING LINKS IN YOUR CHAIN OF SUPPLY

You can be *sure* of delivery when you order from Hudson. That's because the company is its own supplier. An unbroken chain runs from forest to finished product to you. 427,000 acres of Hudson-owned timber assure a steady source of raw material. Pulp operations, kraft-making, and bag manufacture all take place in *one*, modern integrated mill.

Order as much as you want with confidence. Output will be stepped up whenever needed. For example, 60,000 *extra* tons of kraft paper are now being produced and provide expansion of multi-wall sack facilities. Your orders can be delivered promptly.

The sacks are always strong and uniform, built to your exact specifications. Order from Hudson and get what you want...*when you want it!*

Send today for informative literature on Hudson Multi-Wall Sacks. Just drop us a note.

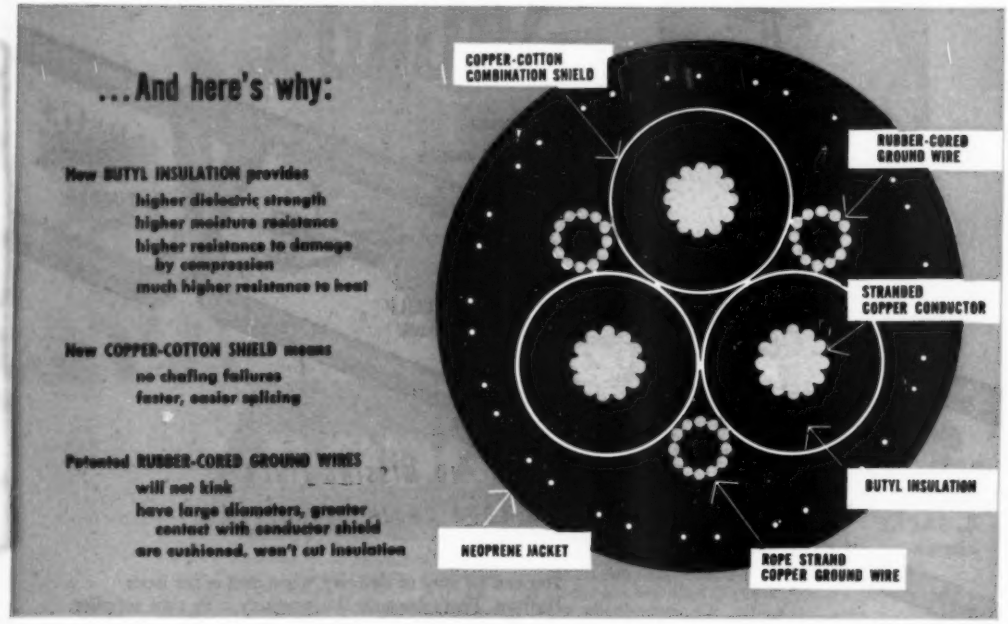


A completely integrated mill serves you better

HUDSON PULP AND PAPER CORPORATION

Dept. 101, 505 Park Avenue, New York 22, N.Y.

Now BUTYL makes Securityflex High Voltage Shovel Cable better than ever



Idleness of big shovels through cable failure means big losses. Anaconda's new BUTYL-insulated SECURITYFLEX* Type SH-D High-Voltage Shovel Cable means big savings. For more information get in touch with your nearest Anaconda Sales Office or Anaconda Distributor. Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

60039

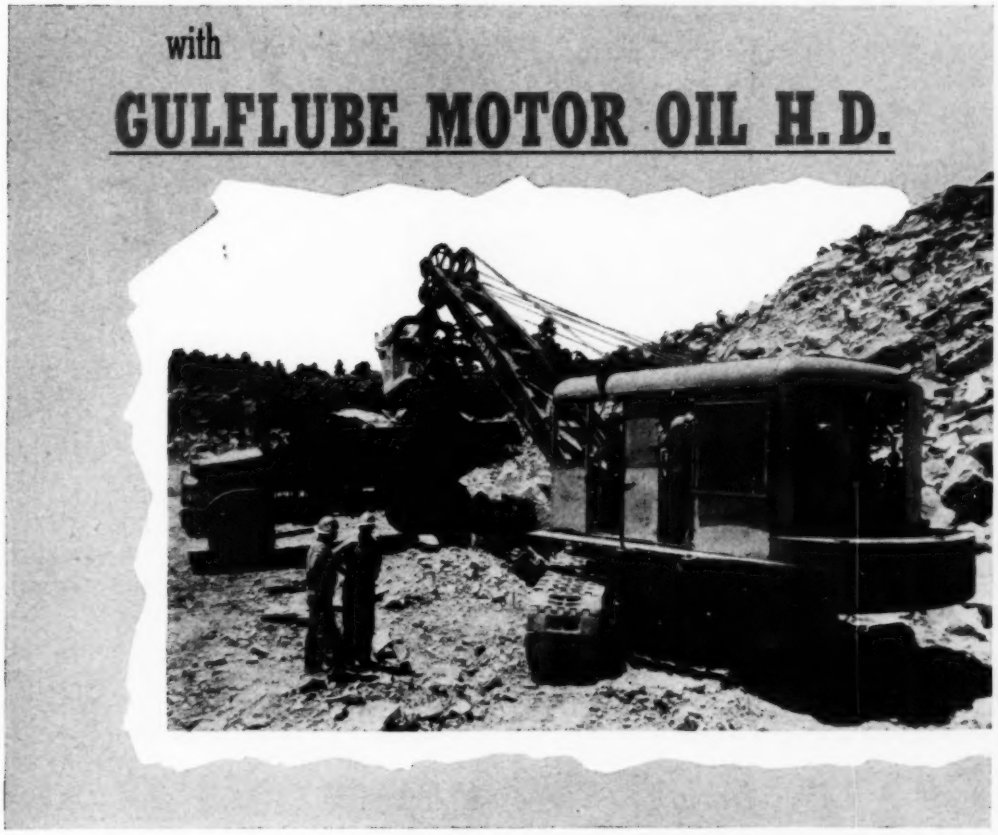
The right cable for the job ANACONDA® WIRE AND CABLE

*Reg. U. S. Pat. Off.

Protect high-speed Diesels in quarry service against ring sticking and excessive wear

with

GULFLUBE MOTOR OIL H.D.



High-speed Diesels in dusty quarry service need high quality detergent-dispersant oils, the type depending on the severity of service.

For the majority of engines Gulflube Motor Oil H.D. is recommended. This high quality oil has a rich paraffin base and sufficient detergency to protect Diesel engines under most operating conditions.

For engines in low temperature operation, extra heavy-duty operation or for those using high sulphur fuels, Gulflube Motor Oil X.H.D. or Gulf Super-duty Motor Oil may be the preferred recommendation. They contain larger quantities of detergent and have alkaline properties which prevent corrosion of cylinder walls, and resulting wear under these severe operating conditions.

For additional information leading to better lubrication and maintenance of your Diesel engine, call in a Gulf Lubrication Engineer. Write, wire or phone your nearest Gulf office.

GULF INDUSTRIAL LUBRICATION

Gulf Oil Corporation · Gulf Refining Company

GULF BUILDING, PITTSBURGH, PA.

Ramps from pit lead up to trestle where units dump through grizzly into loading hopper. Hopper feeds a 22" belt conveyor carrying sand to top of screening plant.

Tournapull dumps 4 to 5-ton load from trestle into hopper. Before loading, material is harrowed to permit drying and to assure moisture content of not over 1½%.

R.G. LETOURNEAU LET EQUIPMENT

HIGH-SPEED, RUBBER-TIRED EXCAVATING • HAULING • LIFTING EQUIPMENT

"D" doubles output of clamshell, truck at Whittier Narrows Dam sand plant

Consolidated Products gets 75 tons of fine, dry sand hourly with self-loading Tournapull, 35 tons with old method

At Whittier Narrows Dam, on the San Gabriel River near El Monte, California, Consolidated Rock Products Co. of Los Angeles took the contract to produce very fine, dry, prepacked sand for gunite filler between rip-rap to prevent washing. "It was a difficult job," reports R. C. Griffin, Production Manager. "The finished product had to meet U. S. Engineers' specification of 95 to 100% passing #16 mesh screen, 60 to 85% passing #30 mesh, 30 to 50% passing #50, and 15 to 25% passing #100. Material could not carry over 1½% moisture content.

"We started the operation with a clamshell and truck. This combination was not satisfactory. The clamshell dug too deep, continually getting sand that was too moist. The trucks needed to have roads built and maintained in order to haul over the sand pile to the screening plant (it cost $800 just to build one short roadway). Production averaged only 35 tons an hour."

Consolidated Rock then rented a high-speed D Tournapull from Sterling R. Macbeth & Co., Inc. of Montebello, California. The rubber-tired 7-yd. "D" proved to be "just the right tool for the job," according to Mr. Griffin.

"It got sand of proper moisture by making a very thin cut," Griffin reports of the self-loading rig. "It doubled our production, delivering 75 tons of sand an hour at an operating cost about 10% lower than the other method. It needed no road-building or sprinkling of the haul route to travel any place over the entire sand area."

If you have similar jobs to do . . . feeding sand or gravel, stockpiling, or stripping, for example . . . get in touch with your LeTourneau Distributor. He'll be glad to show you how Tournapulls and other high-speed, rubber-tired LeTourneau equipment can boost *your* output and lower *your* costs, too. Or, if you wish, he can put you in touch with contractors who have Tournapulls for subcontract or rental.

Before renting his Tournapull to Consolidated, Macbeth used the "D" on a series of highway, land leveling, and housing jobs. "It works well in confined places," says Macbeth, "can carry loads over concrete curbing without damage, self-loads well, drives anywhere." On this housing project, it delivered 10 to 11 loads of hard, dry, silty loam hourly over a typical 4400′ cycle. Performance was so good on all these jobs that Macbeth recently bought his 2nd D Tournapull!

Tournapull-Trademark Reg. U. S. Pat. Off. EP-68-BC

R. G. LeTourneau, Inc.

PEORIA, ILLINOIS

SHORT CUT TO MORE

OF CLEAN CUBICAL

SINGLE 3240 IMPACT MASTER IN CLOSED CIRCUIT SETUP GIVES DILLON STONE COMPANY PROFIT-MAKING CAPACITY

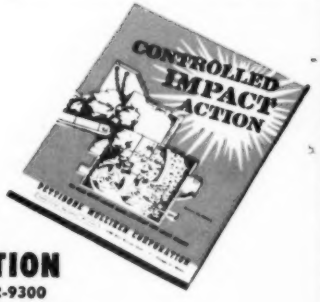
Under normal operations, the Dillon Stone Company, Columbus Junction, Iowa, feed their closed circuit IMPACT MASTER setup with a ¾ yard shovel and 3 quarry trucks to turn out an average of 110 — 120 tph to meet market demands. Their product is approximately 28 percent minus 1¼" plus ¾", 38 percent minus ¾" plus #4 mesh, and 34 percent agricultural limestone.

ADDS SHOVEL... DOUBLES OUTPUT

During their peak operating period last summer, they added another ¾ yard shovel, increased their quarry trucks to 6, and stepped up production to over 200 tph of minus 1¼"... at times reaching a peak of 240 tph. No other additions were made on the plant. The single 3240 IMPACT MASTER does the complete crushing job with 135 hp.

WRITE FOR LITERATURE

More production with minimum plant investment is just one of the profit-making features of the PMCO IMPACT MASTER. Get proof of performance for yourself. Find out how "Controlled Impact Action" works to give you a better quality uniform gradation cubical aggregate, how it gives you greater control over finished product size with simple mechanical adjustments changing the percentage of sizes when desired. PMCO IMPACT MASTERS are available with capacities to 500 tph. Write today for details.



PETTIBONE MULLIKEN CORPORATION

4700 West Division St., Chicago 51, Illinois Phone Spaulding 2-9300

HAMMERMILL HAISS UNIVERSAL

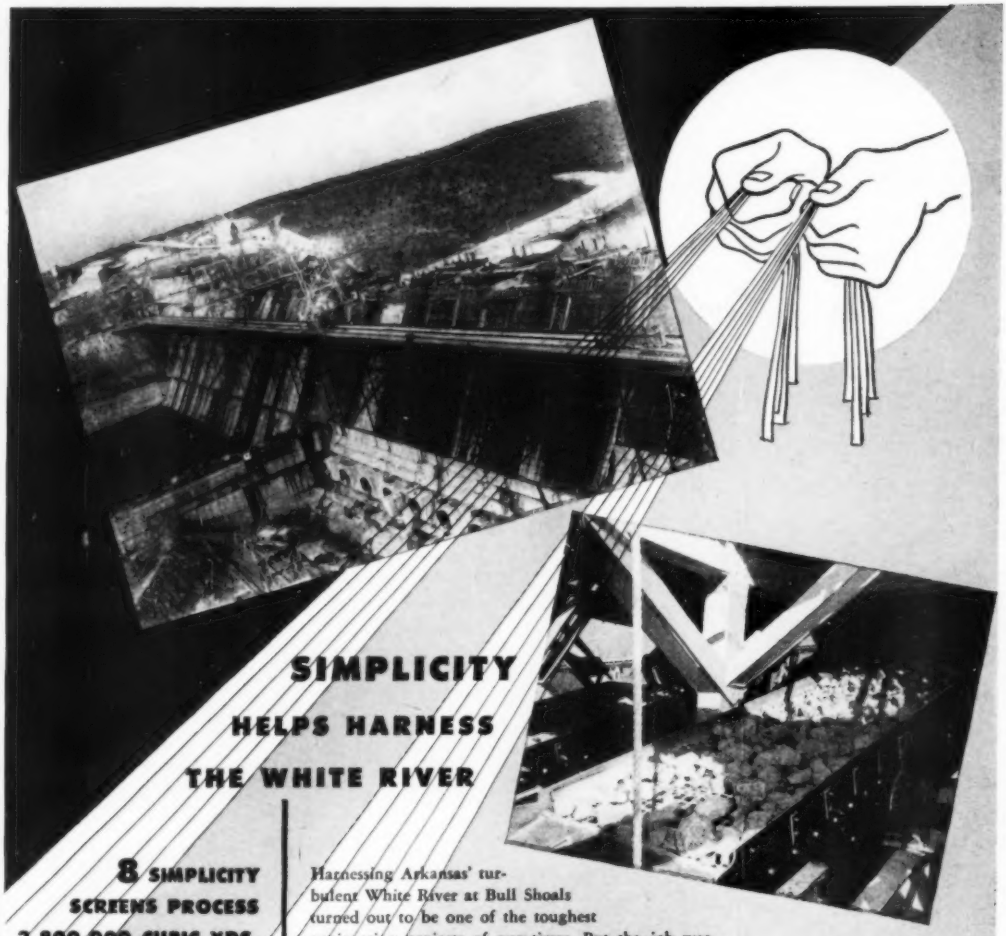
PRODUCTION

AGGREGATE

CONTROLLED IMPACT ACTION

Dillon Stone Company's closed circuit setup with 3240 IMPACT MASTER, 36″ x 12′ apron feeder, 5′ x 14′ 3-deck screen, 30″ x 16′ breaker conveyor, 24″ x 100′ main plant conveyor, 18″ x 62′ return conveyor, 23 yard bins, and portable stockpiling conveyor. To the right, a close-up view of the single 3240 IMPACT MASTER which does the complete crushing job.

GET PROFIT-WISE GO PMCO



SIMPLICITY HELPS HARNESS THE WHITE RIVER

8 SIMPLICITY SCREENS PROCESS 3,800,000 CUBIC YDS. OF AGGREGATE FOR BULL SHOALS DAM, ONE OF AMERICA'S BIGGEST

Harnessing Arkansas' turbulent White River at Bull Shoals turned out to be one of the toughest engineering projects of our times. But the job was finished well ahead of schedule. Part of the credit for the success of the Bull Shoals Dam project goes to SIMPLICITY, for eight 5' x 12' Model "D" Simplicity Gyrating Screens handled more than 3,800,000 cubic yards of aggregate in record time to help speed completion of the project. At the quarry, two Triple Deck Simplicity Screens processed from 600 to 800 tons of crushed limestone an hour, screening out the minus 6-in. product for stockpiling. At the dam site, two Double Deck Simplicity Screens separated and stockpiled 1½-in. to 3-in. and 3-in. to 6-in. material. Four Double Deck Simplicity Screens completed the screening operation by separating ¾-in. to 1½-in. aggregate sizes, No. 4 mesh to ¾-in. and minus No. 4 mesh to dust. Simplicity Screens can help speed up aggregate production in your operation, too. Write us today for complete information or consult a Simplicity sales engineer . . . there's one near you.

- Sales representatives in all parts of the U.S.A.
- FOR CANADA: Canadian Bridge Engineering Company, Ltd., Walkerville, Ontario
- FOR EXPORT: Brown and Sites, 50 Church Street, New York 7, N. Y.

Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND, MICHIGAN

104

coverage alone is not enough

In packaging, your product requires more than *just* coverage. It requires a container that assures the best protection for your product, the best acceptance of your product. Your Chase Salesman is technically trained to study your packaging requirements—and to recommend the specific container that is designed to meet your particular needs.

CHASE Multiwall Paper Bags

• Multiwall Paper Bags, Single Wall and Duplex Paper Bags • Saxolin open mesh bags • Cotton bags of all kinds • Lined and Combined bags, liners and specialties

CHASE BAGS since 1847

for Better Bags...Better Buy Chase

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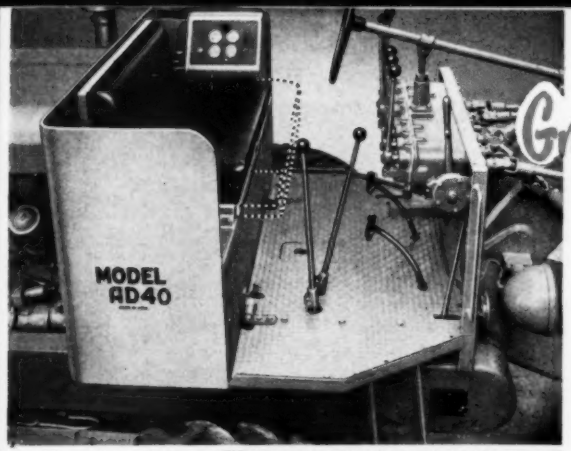
NOW! a Great New HEAVY-DUTY GRADER

Allis-Chalmers AD-40

Weight—23,000 lb.
(24,800 lb. with optional calcium chloride in tires)

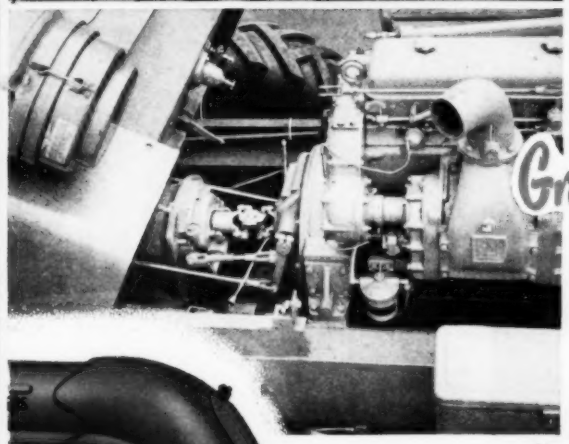
104 Brake hp.

Built to handle All Jobs —FASTER, EASIER



Great New operating ease

No other grader has been designed with the operator more in mind. **Unmatched Visibility**—Single tubular frame from front to platform, new lift cases, low control box and tapered platform give operator a full view of what he is doing. **Feather-Touch Steering**—New hydraulic booster system, fully enclosed in the frame, provides effortless steering with positive control even under toughest conditions. **All-Around Comfort**—Roomy platform, adjustable seat (as shown) and simple controls offer any size operator true comfort—sitting or standing.



Great New service simplicity

Here's maintenance and repair accessibility second to none. Combined fuel tank and seat unit tilts forward for easy access to clutch, transmission and drive shaft. Transmission can be removed without disturbing floor plates. Power take-off and hydraulic pump are mounted outside the dash.

Great New performance

Add these outstanding operator and service advantages to the exclusive Allis-Chalmers features that include ROLL-AWAY* Moldboard—extra high clearances from front to rear—shock-absorbing tubular frame—dependable General Motors 2-Cycle diesel power . . . and you have the finest heavy-duty grader on the market. Get the full story on this new AD-40 from your Allis-Chalmers dealer now.

**ROLL-AWAY is an Allis-Chalmers Trade-mark.*

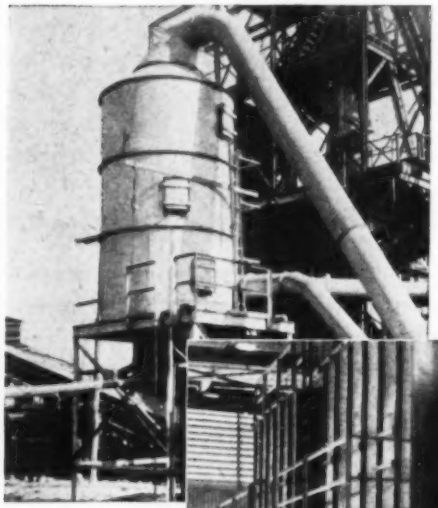
ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

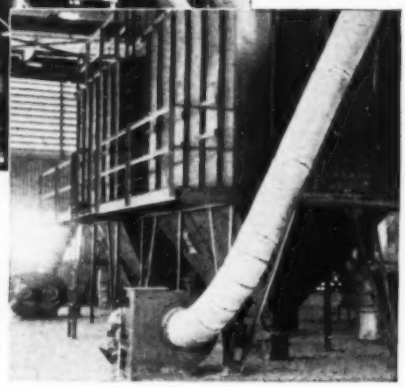
• Designed for Your Job • Built to Take It • Easy to Operate • Easy to Service

Norblo

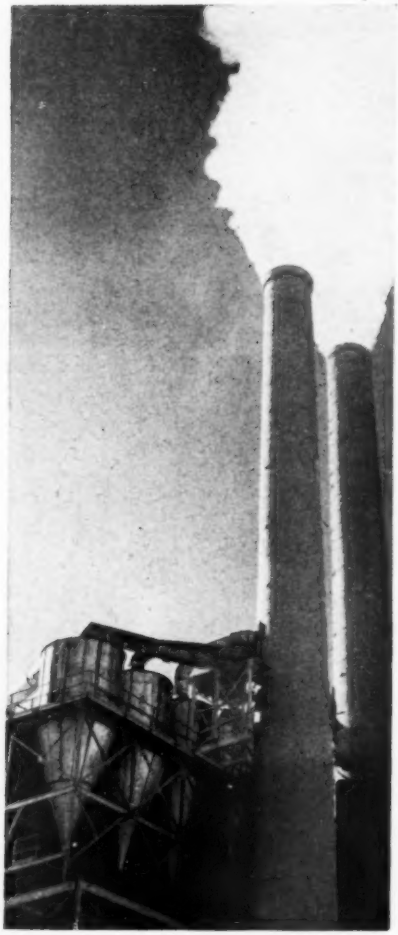
Engineered Dust and Fume Collection . . .



Hydraulic



Automatic Bag Type



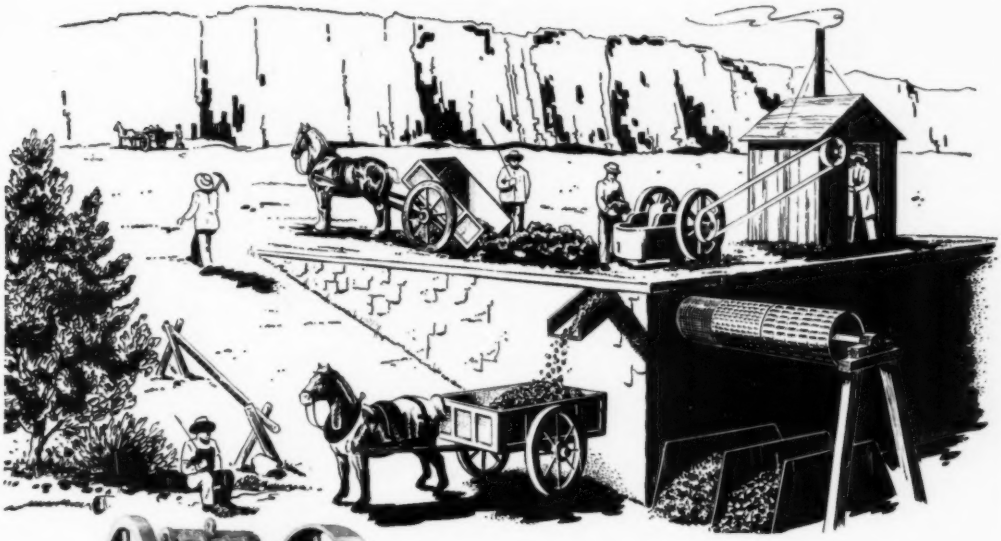
Centrifugal

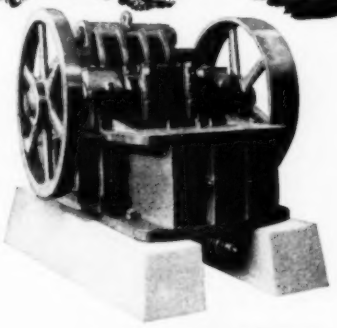
Whatever your need for dust or fume control, Norblo builds rugged, efficient equipment in Centrifugal, Hydraulic and Bag type collecting systems. These three types, frequently used in certain combinations, provide economical dependable control as required in smelting, rock products, chemical, milling and processing fields. Norblo Systems make outstanding records for high recovery with low operating and maintenance costs. Profit by Norblo 30 years' experience in heavy duty dust collection and Norblo development of these basic types of equipment. For good advice on dust or fume problems, consult Norblo.

THE NORTHERN BLOWER COMPANY

Engineered Dust Collection Systems for All Industries

6407 BARBERTON AVE. • CLEVELAND 2, OHIO



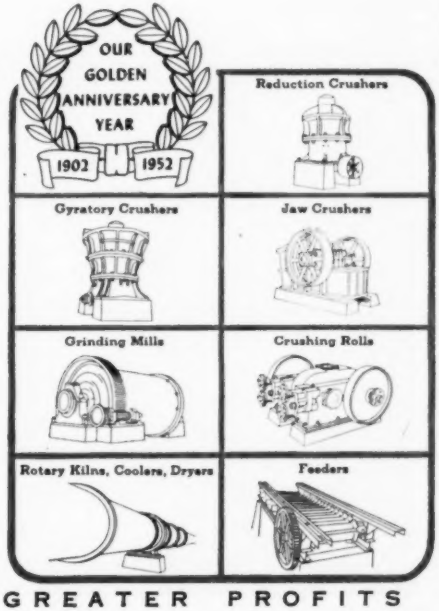


The type H Traylor Jaw Crusher is just one of 33 sizes available to meet your needs. Write for Bulletin 4105.

way back . . .

in the 19th century . . . stone production was mainly a "pick and shovel" job. Even then, operators were concerned over the problem of increased production . . . were gingerly testing early types of crushers.

TRAYLOR HAS GROWN up with the stone production industry. We have seen it develop from back breaking work to a state of high efficiency and high production. Amazing progress has been made in the development of machinery to speed production and cut costs. For 50 years, we have been applying Traylor skill and knowledge to constantly supply still better equipment to the industry that has been our valued customer. As we begin our second half-century, you can continue to count on Traylor for the latest and best stone crushing machinery.



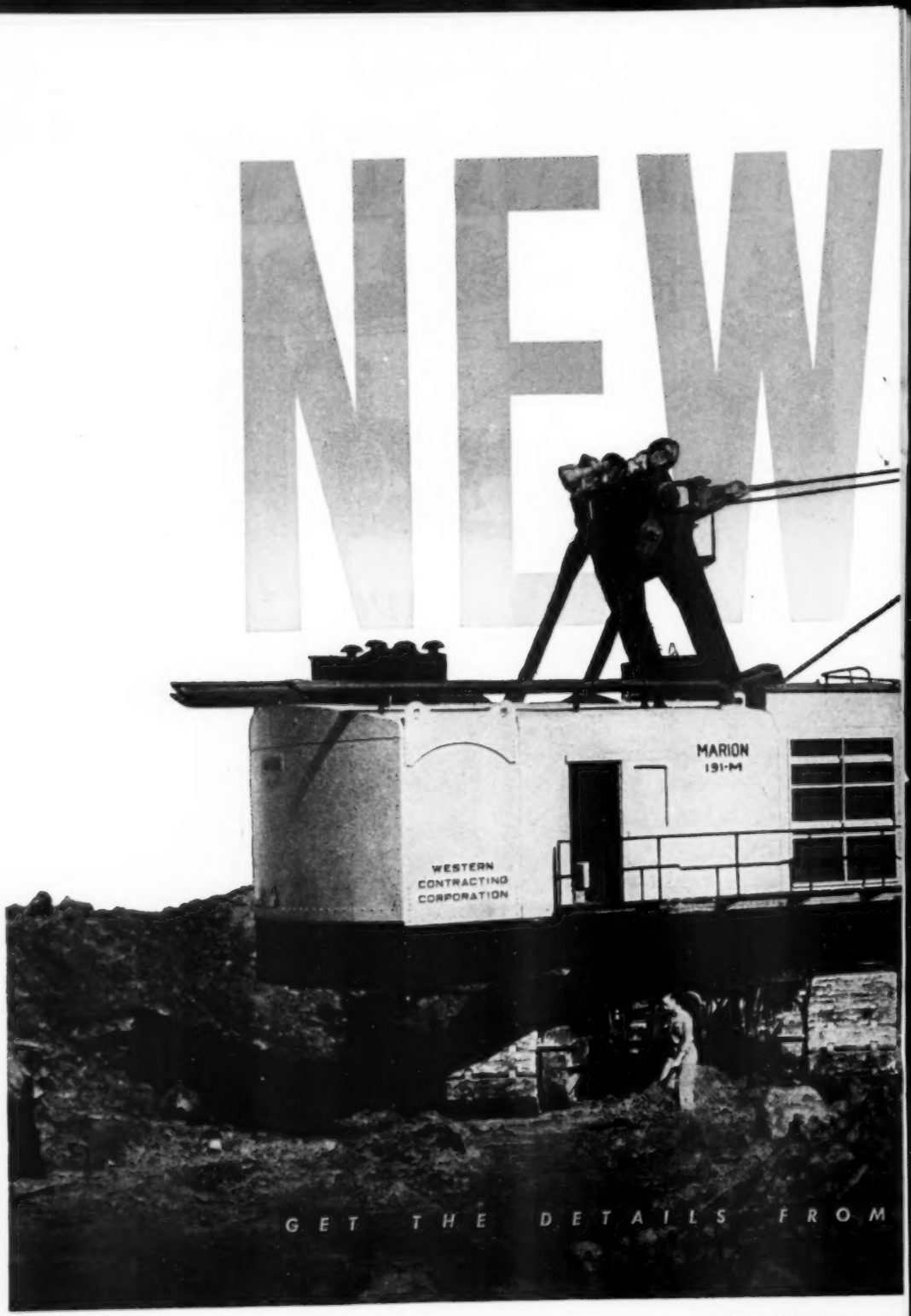
Traylor

ENGINEERING & MANUFACTURING CO.

426 MILL ST., ALLENTOWN, PA.

Sales Offices: New York • Chicago • Los Angeles
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P. Q.

A TRAYLOR LEADS TO GREATER PROFITS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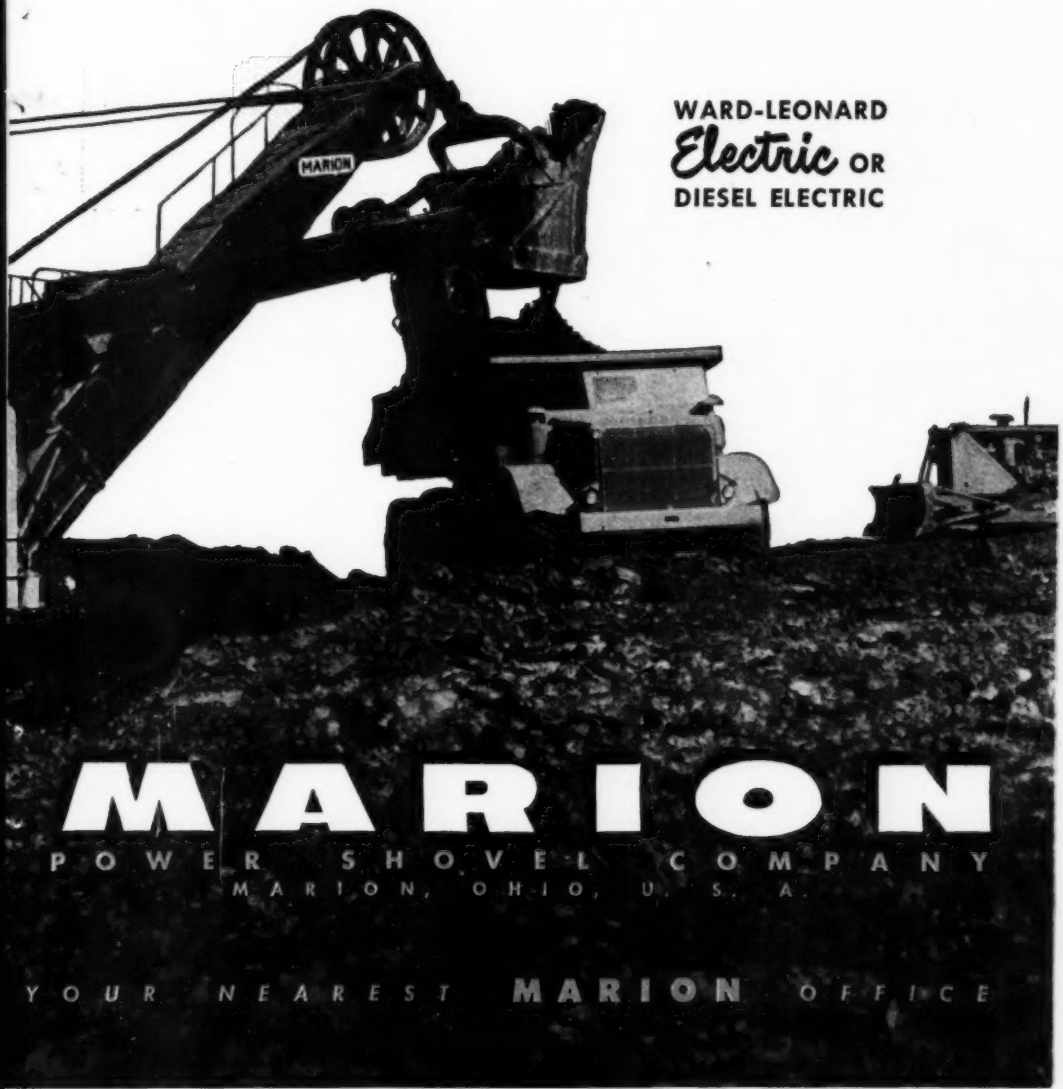
191-M
WESTERN
CONTRACTING
CORPORATION
GET THE DETAILS FROM

MARION 191-M • 10 cu. yds.

World's Biggest Shovel For LOADING BIG HAULAGE UNITS



WARD-LEONARD
Electric OR
DIESEL ELECTRIC

MARION

POWER SHOVEL COMPANY
MARION, OHIO, U. S. A.

YOUR NEAREST MARION OFFICE

KUE-KEN* GYRACONE INCREASES CAPACITY 100%

KUE-KEN* Gyracone Replaces Rolls and Doubles Capacity with Less Power

California crushing plant replaces 30" x 18" rolls with a 3 ft. Kue-Ken Gyracone. Capacity was increased 100% with less power required.

Costly Welding Eliminated

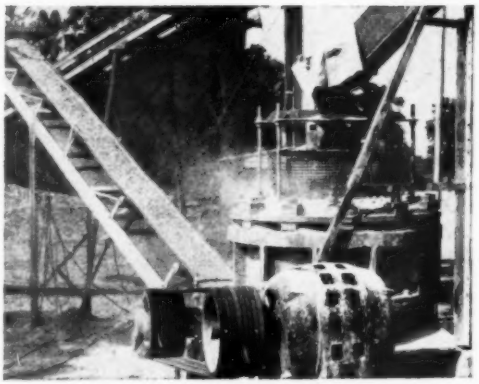
Daily welding was required on the rolls to maintain product size. The plant suffered from both high welding costs and lost production while closed down for the welding. The Kue-Ken Gyracone eliminates this old style reduction method with its heavy maintenance expense and low capacity. The harder the rock to be reduced the greater the savings with the Kue-Ken.
The savings alone will quickly pay for the cost of todays only completely newly designed crusher. This operator reports it was almost impossible to meet specifications on crushed rock with the rolls and now plenty of required small sizes come thru.

Less Wear with Modern Design

Crushing without rubbing gives Kue-Ken operators longer life to crushing faces. Rock is instantly gripped and crushed between the crushing faces without slipping and rubbing. Rock is not forced upwards grinding away the costly crushing faces as in ordinary gyratory crushers. Wear and power is reduced to the minimum, capacity is maximum.

SAVES ON INSTALLATION. Very low headroom required, 3 ft. size only 39" high. Fits easily into flow sheet. Takes choke feed, has no restricting spiders to reduce flow. Lower horsepower for drive saves on power. Lighter weight saves on freight, foundation and installation costs. Powerful, compact yet with larger, stronger shafts which provide greater bearing area, for longer life. Completely pressure lubricated with filtered oil.

You Save with Kue-Ken



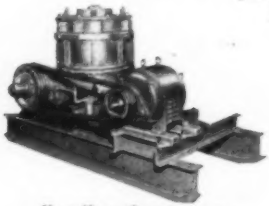
Note extremely low headroom . . . only 39" high. Takes choke feed. Fits easily into flow sheet. Product size is quickly and easily changed. This operator will profit from Kue-Ken's many savings with "Crushing without Rubbing."

Kue-Ken oil seal keeps oil in and dirt out without rubbing against high speed, gritty surfaces. Lasts for years. Automatic release for both tramp iron and overload.

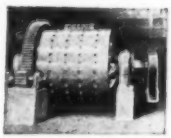
Get Complete Facts — Write for Bulletins

YOUR NEAREST WESTERN DEALER

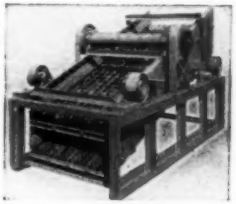
CALIFORNIA: (Southern)—Migula & Co., Pasadena. TEXAS: Closner Equipment Co., San Antonio. UTAH: Lund Machinery Co., Salt Lake City. WASHINGTON: Seattle—Washington Machinery and Storage Co.; Spokane—Construction Equipment Co. OREGON: Portland—Edward L. Kropp Co., Medford Cal-Ore Machinery Co. MEXICO CITY: Anahuac Machinery Co. S. A.



Kue-Ken Gyracones



Rib-Cone Ball Mills



Overstrom Screens

*Pronounced Que-Ken. U.S. and Foreign Patents Pending.

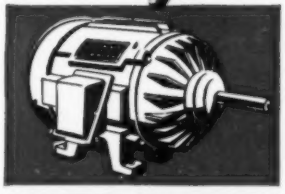
452 CHESTNUT ST. • OAKLAND 20, CALIFORNIA

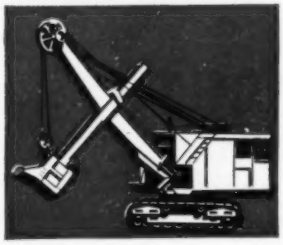
STRAUB MFG. CO.

Kue-Ken Balanced Crushers	Rib Cone Ball Mills	Overflow Classifiers
Kue-Ken Simplex Crushers	Concentrating Tables	Feeders
Kue-Ken Gyratory Crushers	Overhead Eccentric Crushers	Screenwheel Classifiers

Pennsylvania Crusher Co., Exclusive Licensed Eastern Manufacturer and Distributor Broad and Arch Streets, Philadelphia, Pennsylvania.
Sir W. G. Armstrong Whitworth & Co. (Ironfounders) Ltd., Authorized Licensed Manufacturer and Distributor Close Works, Gateshead-upon-Tyne, England.

Quarry Equipment Staying Power Upped BY THESE 4 STEPS





1st step: Examine Cities Service lubricants for out-and-out quality through your purchasing experts or test facilities . . . or from service records established by critical users.

2nd step: Look into the completeness of the Cities Service line as an aid to simplified ordering and prompt, steady supply . . . backed by the extensive facilities and intensive cooperation to keep you out of any lubrication "jam."

3rd step: Review today's most effective lubrication practices by consulting that fully informed specialist, the Cities Service Lubrication Engineer.

4th step: Ask about this high character line and the practical technical assistance now upping quarry equipment staying power for many of the industry's "hardest drivers." Phone or write CITIES SERVICE OIL COMPANY, Dept. A21, Sixty Wall Tower, New York City 5.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

POWER at a minute's notice!

In every branch of American Industry Plymouth Locomotives are making an outstanding name as powerful, dependable, cost-cutting switchers.

The 35-ton Plymouth Locomotive shown above has been in operation for six years at Martinsburg, West Virginia, hauling lime and crushed stone from quarry to crushing plant of the Blair Limestone Division, Jones and Laughlin Steel Corporation.

"Our Plymouth hauls 13 loaded cars or 30 empty cars over curving, narrow-gauge track, up and down a 3½% grade," reports T. J. McCarthy, General Superintendent. "What's needed for this big task is *power* — and Plymouth provides plenty of it, always available at a minute's notice!"

Find out now how Plymouth Switching Locomotives can speed your operation, cut costs, and provide the smoothest possible operation with Plymouth's Hydraulic Torque Converter. Send for catalog, describing 3-ton to 70-ton sizes . . . Gasoline, Diesel, and Diesel-electric . . . narrow and standard gauge. PLYMOUTH LOCOMOTIVE WORKS, Division of The Fate-Root-Heath Company, Dept. A-15, Plymouth, Ohio.

PLYMOUTH LOCOMOTIVES

PLYMOUTH LOCOMOTIVE WORKS, DIVISION OF THE FATE-ROOT-HEATH COMPANY, PLYMOUTH, OHIO

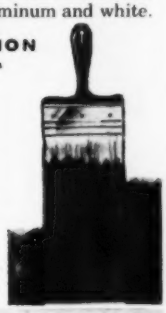
Cut your maintenance costs on every rustable metal surface indoors and out with this practical, sensible coating!

STOP RUST! with RUST-OLEUM

Day in and day out, your equipment and metal structures face the *toughest rust-producing conditions* — dust, fumes, rain, moisture, heat and general weathering! To *stop rust* and protect your metal surfaces you need RUST-OLEUM!

RUST-OLEUM may be applied directly over surfaces *already rusted* without removing all the rust. Just wirebrush and scrape with sharp scrapers to remove rust scale and loose particles . . . then apply by brush, dip, or spray. Costly sandblasting and chemical pre-cleaning are not usually required. This means that one man often does the work of two with RUST-OLEUM! Practical, too . . . because RUST-OLEUM *beautifies as it protects* in all colors, aluminum and white.

RUST-OLEUM CORPORATION
2715 Oakton Street • Evanston, Illinois



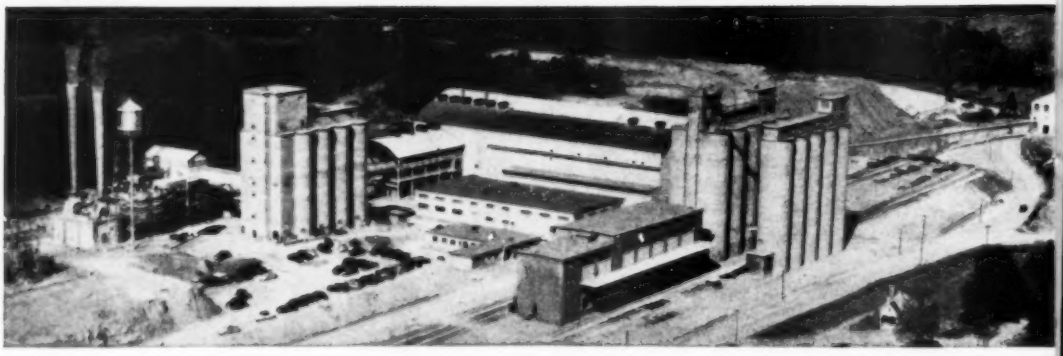
May be applied directly over rusted surfaces without removing all the rust!
Available in All Colors, Aluminum and White

PROTECT CONVEYORS • PIPES • BUILDINGS • EQUIPMENT • TANKS
STACKS • METAL SASH • GIRDERS • STAIRWAYS • CRUSHERS • DUSTERS

CLIP THIS TO YOUR LETTERHEAD
MAIL TO: RUST-OLEUM CORPORATION
2715 Oakton Street • Evanston, Illinois

- ☐ Have a Qualified Representative Call
- ☐ Full Details on Free Survey
- ☐ Complete Literature
- ☐ Nearest RUST-OLEUM Source

FULLER STARS

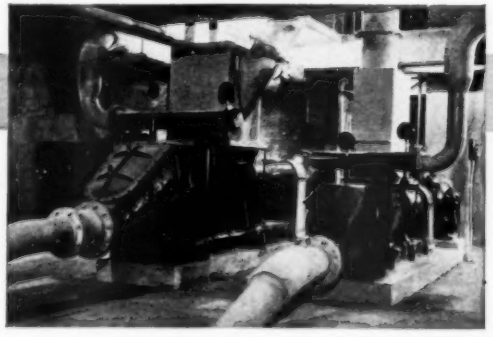


at the outstanding new Lone Star, Virginia, plant

In Lone Star Cement Corporation's new Virginia dry-process cement plant, Fuller Conveying Systems are used in transporting cement from one operation to another... the fastest, most economical and convenient way to handle cement in the plant.

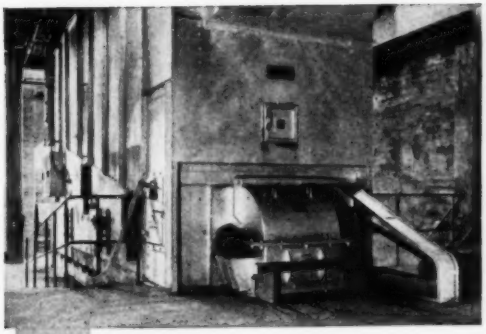
Lone Star also uses Fuller-Kinyon pumps, abrupt-quenching Fuller Inclined-Grate Coolers, Fuller Compressors and F-H Airslides in its plants.

And that's why whenever you plan to expand your facilities, call on Fuller. It's your first step toward more efficient handling practices. Write the FULLER COMPANY, Catasauqua, Pennsylvania.



★ Fuller-Kinyon 9" 80-ton Type H Pump (left) conveys raw materials a distance of 592 ft. from tube mills to silos. Air is supplied by a Fuller Single-stage 1044 c.f.m., 26 psi, Rotary Compressor, capacity 1044 c.f.m., 26-lb. pressure.

Fuller-Kinyon 8" Type H Pump (right) conveys finished Portland cement from tube mills to storage silos, capacity 360 bbl. an hour. Maximum conveying distance approximately 502 feet. Air for conveying, supplied by a Fuller Single-stage Rotary Compressor, capacity 1400 c.f.m., 26-lb. pressure.



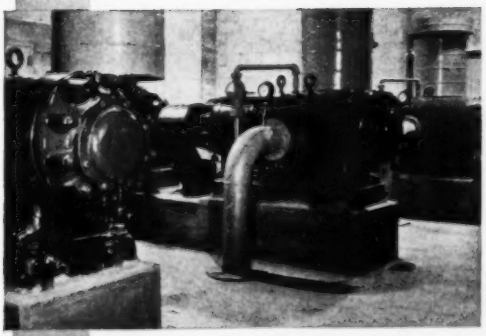
★ One of two Fuller Inclined-Grate Coolers, each designed to cool 2200 barrels of Portland cement clinker per day, from rotary kilns at approximately 2500 deg. fahr. to 150 deg. fahr. discharge temperature, with cooling air of 80 deg. fahr. Air is supplied by a fan, having a capacity of 33,660 c.f.m. at 6-in static pressure, fan driven by 50 hp. motor. Both coolers installed are equipped with Fuller Clinker Breakers.

★ F-H Airslide Conveyor, underneath walk-way, conveys 600 cu. ft. of clinker cooler dust an hour 66 feet, from dust collector to an elevator. Air furnished by a No. 5E 3 hp. motor Buffalo Blower, driven by a 3 hp. motor (shown on platform, upper left).

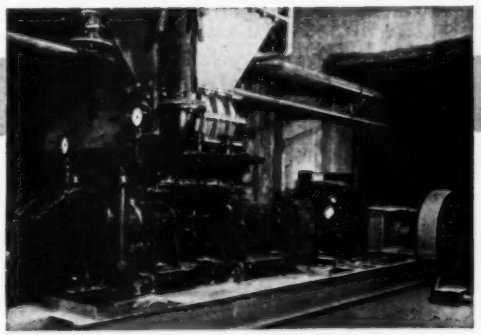
DRY MATERIAL CONVEYING SYSTEMS AND COOLERS—
COMPRESSORS AND VACUUM PUMPS—
FEEDERS, AND ASSOCIATED EQUIPMENT

Fuller

FULLER COMPANY, Catasauqua, Pa.
120 S. La Salle St., Chicago 3
420 Chancery Building, San Francisco 4

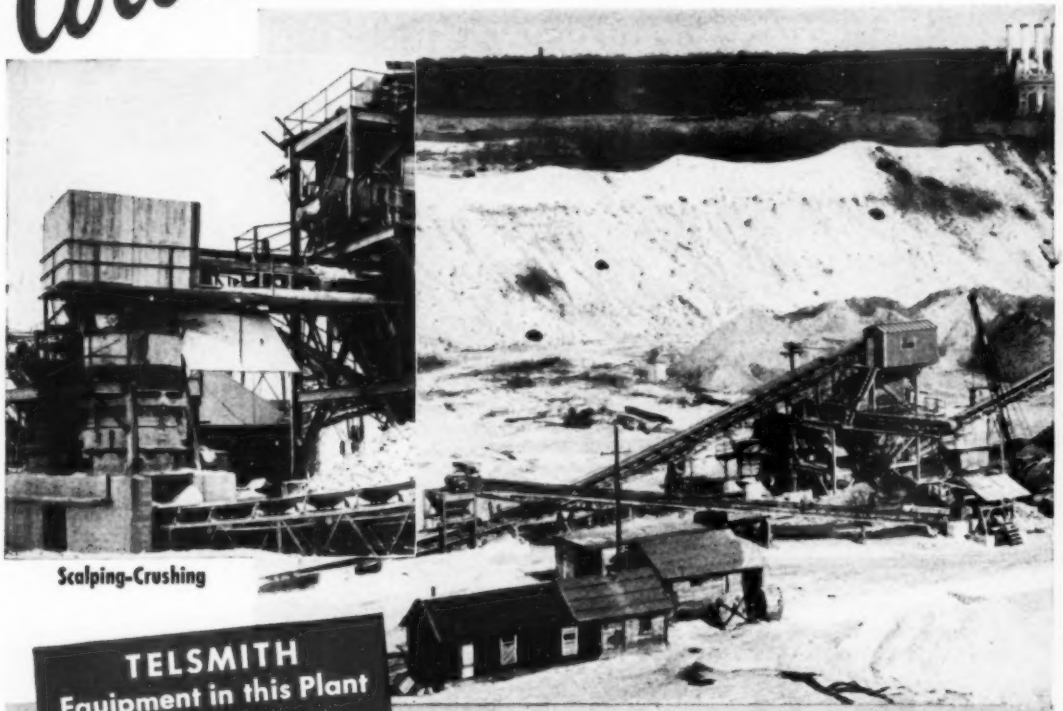


★ Three Fuller Rotary Single-stage Compressors which furnish air for the three Fuller-Kinyon Portable Pumps underneath silos. Capacity of compressors, each, 1400 c.f.m., 21-lb. pressure.



★ One of three Fuller-Kinyon 7" Type H Portable Pumps each conveying 400 bbls. finished Portland cement an hour, 398-490 feet, from silos to packer bins, bulk loading stations, and dribble bins. Pumps have quick-disconnect clamps, for connecting pumps to Fuller rotary valves under each silo hopper. Pumps are also equipped with spring-operated cable reel, to reel and unreel the electric cable as pump is moved underneath the silos.

Colonial SAND & STONE CO., Inc. *uses*



Scalping-Crushing

TELSMITH Equipment in this Plant

Two 5′ x 14′ Two-Deck Heavy-Duty Scalping Screens

Two 48-S Gyrasphere Crushers

Eight 4′ x 10′ One-Deck Vibro-King Dry Screens

Four 4′ x 14′ Two-Deck Vibro-King Wet Screens

Four 60″ x 9′ Super Scrubbers

Eight 4′ x 10′ One-Deck Vibro-King Wet Screens

Two 4′ x 12′ Two-Deck Pulsator Rinsing Screens

Fourteen Field and Plant Conveyors—18″, 24″, 36″, 42″ wide; total length about 3000′

Nineteen 24″ x 15″ Special Tunnel Gates

GS-21

● **COLONIAL of NEW YORK CITY and LONG ISLAND own and operate this modern all-steel sand and gravel plant. Designed in close co-operation with Telsmith engineers, plant layout and machinery is of the latest type, properly co-ordinated and balanced for flexibility and capacity, with interlocking features to assure smooth, trouble-free operation.**

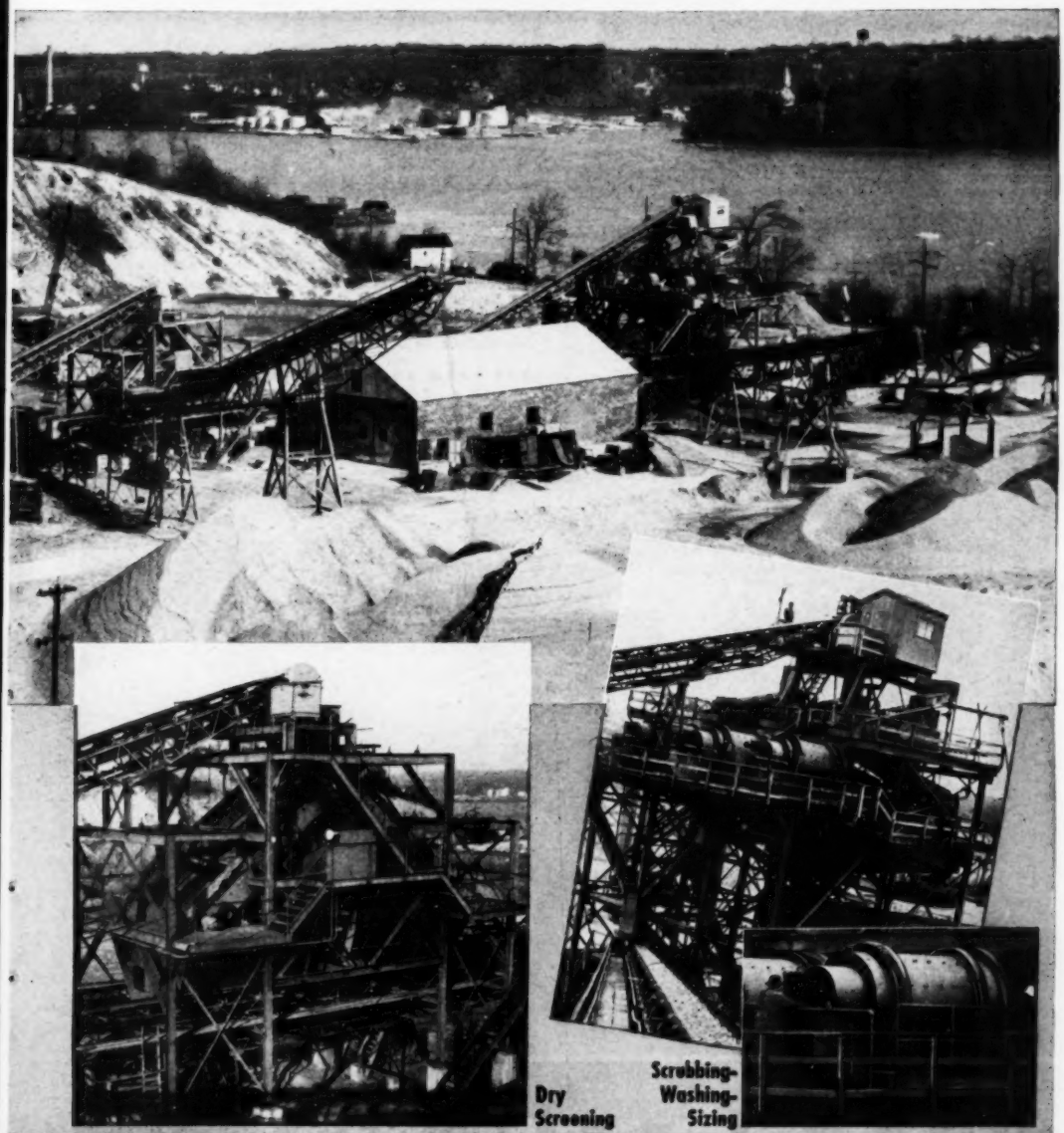
Production averages about 1000-1200 tons per hr., making four kinds of material: minus 1½″ plus ¼″ crushed and uncrushed gravel mixed, minus ¼″ plus ⅛″ grits, minus ⅛″ sand, all washed; and minus ⅛″ dry sand. Most of the material is loaded into barges for shipment to New York. A truck-loading plant handles local demands.

In Scalping-Crushing Unit, two 2-deck Pulsators are in closed circuit with two 48″ Gyrasphere Crushers which reduce all gravel to minus 1½″. In the Dry Screening Plant eight special Vibro-King Dry Screens produce the dry sand. Scrubbing-Washing-Sizing Unit has two batteries of Vibro-King Wet Screens—two-deckers ahead, with single-deckers following the Super Scrubbers. Get Bulletin 266 describing Telsmith Complete Plant Service.

SMITH ENGINEERING WORKS

504 EAST CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

TELSMITH



Cable Address: Sengworks, Milwaukee

51 East 42nd St. New York 17, N. Y. | 211 W. Wacker Drive Chicago 6, Ill. | 713 Commercial Trust Bldg. Philadelphia 2, Pa. | 238 Main Street Cambridge 42, Mass. | Boehck Eqpt. Co. Milwaukee 3, Wis. | A. N. Wigle, 294-6 N. Roosevelt Ct. Columbus 9, Ohio

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Rish Eqpt. Co., Charleston 22, & Clarksburg, W. Va.—Roanoke 7, & Richmond 10, Va. • Wilson-Weesner-Wilkinson Co., Knoxville 8, & Nashville 6, Tenn.

OHIO GRAVEL CO. GETS *FULL* JOB COVERAGE WITH LORAINS

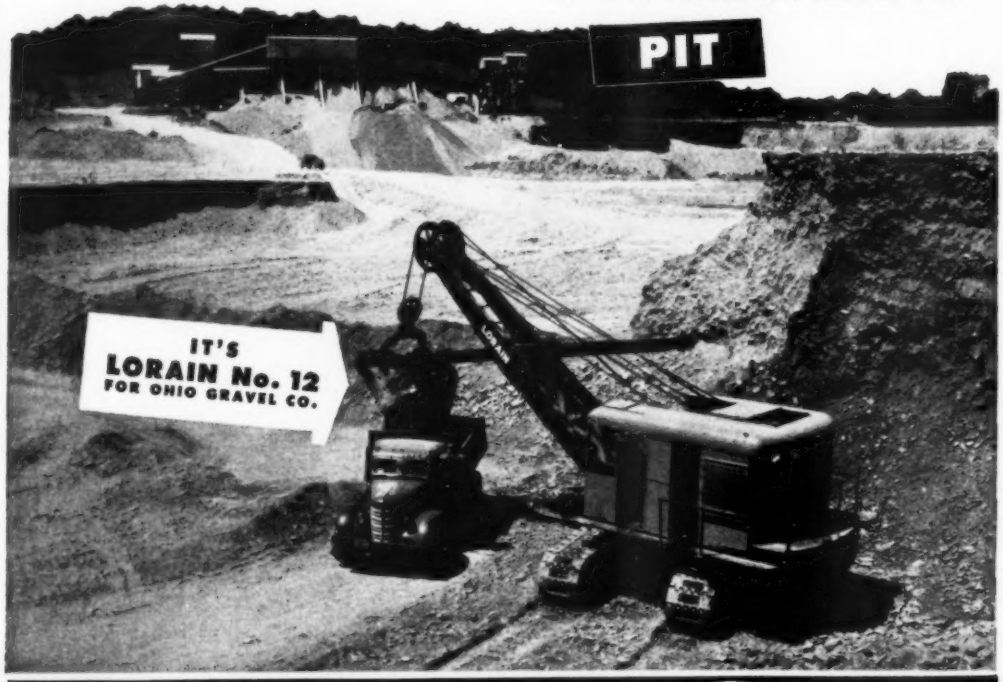
YARD

(above) On general yard service, stockpiling, loading trucks, etc. the mobility of a Lorain rubber-tire mounting is a big advantage in serving widely scattered yard areas, at Ohio Gravel Co.

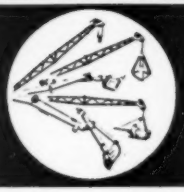
Newest and largest of six Ohio Gravel Co. plants—at Camp Dennison, Ohio—is geared to get out the gravel—*fast!* And they do it with Lorains best fitted for each operation. On duty in the pit (below) a big, husky 2-yard Lorain-820J crawler shovel is loading out the top 30 feet of tough cemented gravel. On the bottom 20-foot bench, another Lorain loads out the smaller sizes. These 2 Lorains feed 500 tons an hour into the largest plant in Southern Ohio.

But for hopper-charging and truck-loading, a rubber-tire Lorain Self-Propelled clamshell takes over and keeps busy on many fast moves all over the yard. For efficient job planning like this at "Ohio", ask your nearby Thew-Lorain Distributor to fit your pit with the best Lorain!

THE THEW SHOVEL CO., LORAIN, OHIO



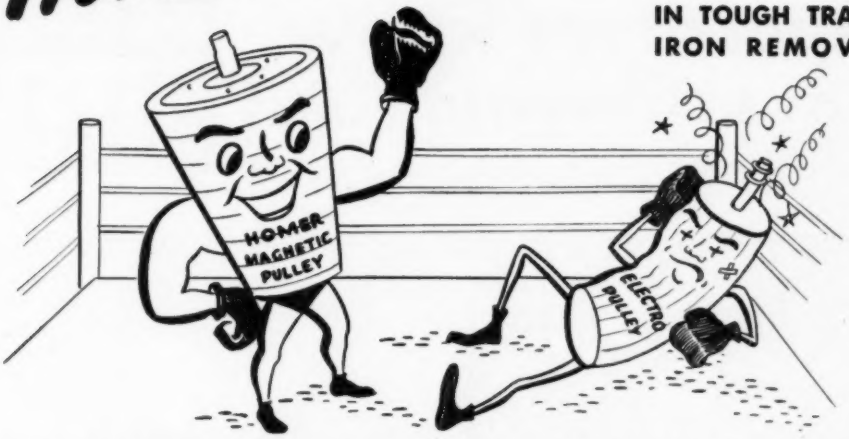
THEW LORAIN®
on CRAWLER or RUBBER



SHOVELS
CRANES
DRAGLINES
CLAMSHELLS
HOES

Homer the Winnah!

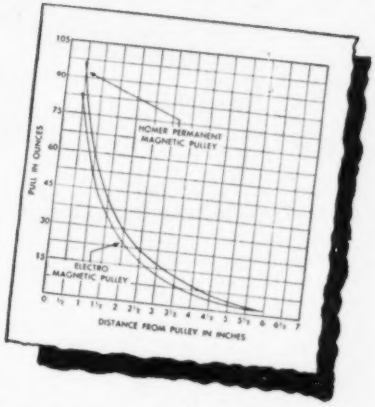
IN TOUGH TRAMP IRON REMOVAL



GUARANTEED PERMANENT MAGNETIC PULLEYS

There's no denying that Homer Heavy-Duty Permanent Magnetic Pulleys are winners in extra-tough bouts in separating ferrous from non-ferrous materials.

Efficiency and comparative tests have been made both by our own engineering department and by an unbiased outside testing laboratory . . . the results are shown plotted on the graph at right, proving that Homer Heavy-Duty Pulleys do equal or exceed the strength and efficiency of electro magnetic pulleys.



Homer Permanent Magnetic Pulleys are available in Standard and Heavy-duty sizes of 12", 15", 18", and 20" diameters, with belt widths from 4" to 60". Sizes in 24" and 30" diameters available for Light, Standard or Heavy-duty service, with belt widths from 20" to 60". Write for Literature.

MAGNETIC PLATES
MAGNETIC PULLEYS
MAGNETIC DRUMS

HOMER

MAGNETIC TRAPS
MAGNETIC DUCTS
MAGNETIC SWEEPERS

THE HOMER MANUFACTURING CO. INC., DEPT. I-52, , LIMA, OHIO, U. S. A.

PRODUCERS OF MAGNETIC SEPARATOR EQUIPMENT SINCE 1923

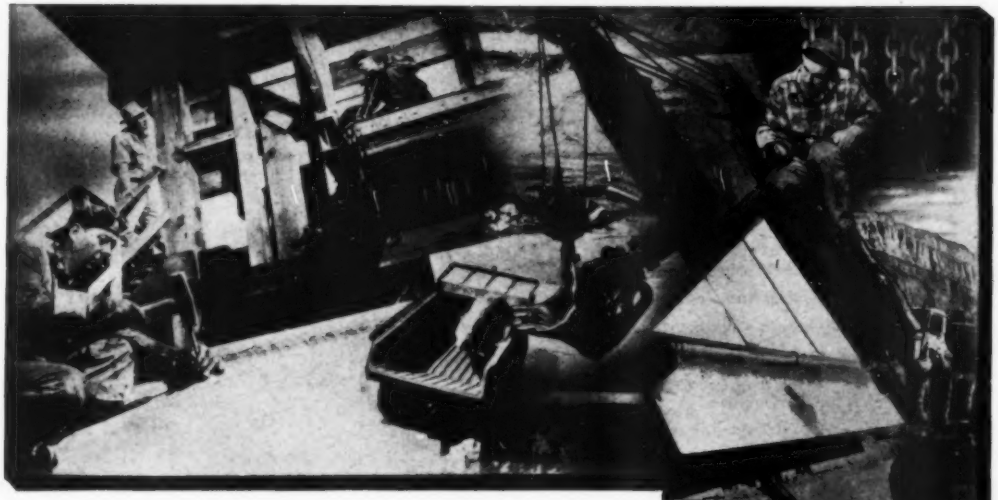
On the *TOUGH* Jobs Operators know

JALLOY HEAT-TREATED PLATES

J&L STEEL

. . . resist impact, abrasion and corrosion

. . . provide longer service life, lower maintenance costs



Cost-conscious quarry operators throughout the industry are cutting maintenance and downtime costs by installing tough J&L Jalloy heat-treated steel plates on their equipment.

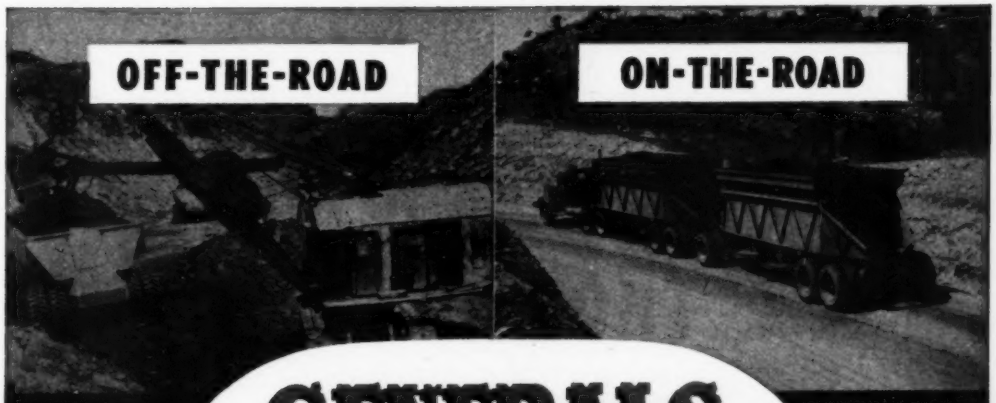
They've found that on the tough applications heat-treated Jalloy lasts 4 to 20 times longer than mild steel. The reason—Jalloy has the physical properties to resist the severe impact, abrasion and corrosion of quarrying operations. It is produced with a yield strength of 160,000 lbs. per sq. in. and a Brinell hardness of 341 to 388. The result—Jalloy saves money by cutting steel requirements, reducing downtime for repairs and replacement, and keeping labor costs for maintenance to a minimum.

Here are some of the applications where quarry operators are using heat-treated Jalloy—Dump Truck Bottom Liners, Rock, Sand and Gravel Chute Liners, Dipper Stick, Shovel and Drag Bucket Reinforcing. You can get Jalloy in bar form and in plates up to 72" wide and 20' long with thicknesses from $\frac{3}{16}$" to $1\frac{1}{2}$".

Start finding out more about Jalloy today. Just write to Jones & Laughlin Steel Corporation, 465 Jones & Laughlin Building, Pittsburgh 30, Pa. We'll send you a free copy of our booklet, "For Longer Wear . . . Less Repair!" It will give you more complete information on the properties, heat treating and workability of heat-treated Jalloy, the modern mining and quarrying steel.

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH 30, PA.



GENERALS

Resist cuts, scrapes, bruises...
Give more traction! More speed!
More safety—

WORK FASTER... LAST LONGER... COST LESS

more profit for you per job!

GENERAL L. C. M. Broad, deep, self-cleaning tread lugs and reinforced shoulders for more traction off-the-road. Longer wear on razor sharp mine and quarry surfaces.

GENERAL H. C. T. for most work on-the-road, some off. More rubber, more cords per inch for greater safety. Extra traction through sand, gravel, slush, mud.

THE GENERAL L.C.M.

THE GENERAL H.C.T.

GENERAL UNDERGROUND MINING TIRE

Extra strong, extra thick rubber at the shoulders. Resists cuts, snags, bruises. More traction. More wear.

REQUEST GENERAL TIRES ON YOUR NEW EQUIPMENT

DREDGE PUMP USERS O.K. THOMAS PUMPS!

News spread rapidly 2½ years ago that an improved and modernized dredge pump had been developed by Thomas Foundries, Inc. Until that time there was great need for a sand-and-gravel pump especially designed to use high abrasion-resistant materials in its manufacture so it would have longer life and greater efficiency.

Pump users at first simply were amazed at the performance of the Thomas Dredge pump. Evidence quickly accumulated, showing 3 to 6 times longer life plus greatly increased pumping efficiency.

Now, many installations of Thomas Durable Dredge pumps have been made in all sections of the country. Experience of users shows that less repairs are needed. But when they are needed, *Thomas quick-delivery Repair Service ships parts immediately or at most within one week.*

During the past year we have reproduced in this magazine letters from users who enthusiastically confirmed our claims to be hard facts — and the profit side of their ledgers proved it. Watch for more letters of the same kind to be published during the coming year.

If you are interested in lower sand-and-gravel production costs, write for literature on Thomas Durable Dredge Pumps. Address THOMAS FOUNDRIES, INC., Birmingham, Alabama.

by FARRELL-CHEEK

ECONOMICAL, LONG-WEARING STANDARD OR SPECIAL

ALLOY CAST STEEL PARTS

FARRELL-CHEEK is a name which has grown to be accepted as standing for the finest in cast steels. The excellent physical properties which have been developed during more than forty years of research and experimentation provide industrial parts which are tough and durable, and eminently resistant to wear.

Farrell-Cheek special steels, Carbon, Farrell's 85, and Farrell's Hard Edge possess the particular qualities which enable parts to serve best under specific working conditions. Farrell's 85 is made in combinations of carbon, vanadium, nickel, copper, or chrome, with manganese-molybdenum. It can be heat-treated in its entirely to combine toughness, rigidity, and resistance to wear. Farrell's Hard Edge can be hardened to depths of from 1/8" to 1/4", and so permit fine machining qualities along with high resistance to abrasive wear.

The experience which Farrell-Cheek has had in the successful production of small to medium castings makes it a truly one-point source for your needs for new and replacement parts. A completely modern plant, constant, thorough controls supervised by competent engineers, plus skilled manufacturing methods, will furnish the service you desire.

FARRELL - CHEEK STEEL CO.

MANUFACTURERS OF HIGHEST QUALITY ELECTRIC FURNACE CARBON AND ALLOY STEEL CASTINGS

FARRELL'S CARBON STEEL CASTINGS
FARRELL'S HARD EDGE STEEL CASTINGS
FARRELL'S "85" STEEL CASTINGS

RAILROAD CASTINGS
Locomotive and Car
R. R. Specialty Castings
ELEVATOR, CONVEYOR PARTS
Sprockets, Traction Wheels, Chains, Buckets, Rollers, Idlers.

BUSHINGS
Carbon and Alloy Steels Machined, Hardened, Ground.
CRANE WHEELS
Overhead, Gantry, Monorail, Ingot Car, Charging Machine

GEARS AND PINIONS
"True Tooth" Gears and Pinions, Sheaves and Wheels.
SPECIALIZED CASTINGS
Light Section Castings

STOKER PARTS
Feed Screws, Furnace Tools, Flanged Pipe, etc.
HEAVY HARDWARE
Wire Rope Fittings, Choker Hooks, Bar Benders, Cutters

YOUR INQUIRY WILL PROMPTLY BRING DETAILED INFORMATION PERTAINING TO ANY OF THE ABOVE FARRELL-CHEEK PRODUCTS

SANDUSKY, OHIO U.S.A.

ROCK RATED!

MEANS RUGGED STRENGTH

P&H MAGNETORQUE*

MEANS SMOOTHER, FASTER SWING

IF YOUR work calls for heavy going — in mine and quarry — here's the machine *designed* for it — the P&H 1055 (3½ yds.).

Here's tough, all-welded construction to take abuse in stride . . . extra stability so you can use all the power you need . . . speed and smooth operation in every function to give you maximum output.

MAGNETORQUE ELECTRIC SWING gives you faster swing, more accurate control with less strain on machine and operator. No more swing frictions with their adjustments and replacement costs.

See this real ROCK RATED shovel in action and judge for yourself.

*T. M. of Harnischfeger Corporation for electro-magnetic type clutch.

P&H

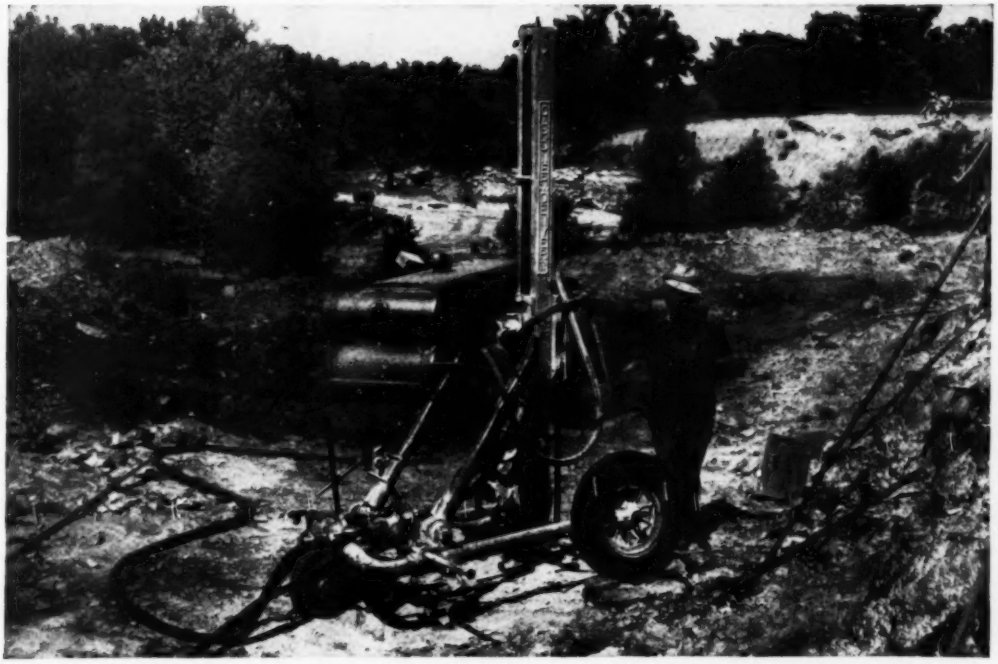
EXCAVATORS

4451 West National Avenue

Milwaukee 14, Wisconsin

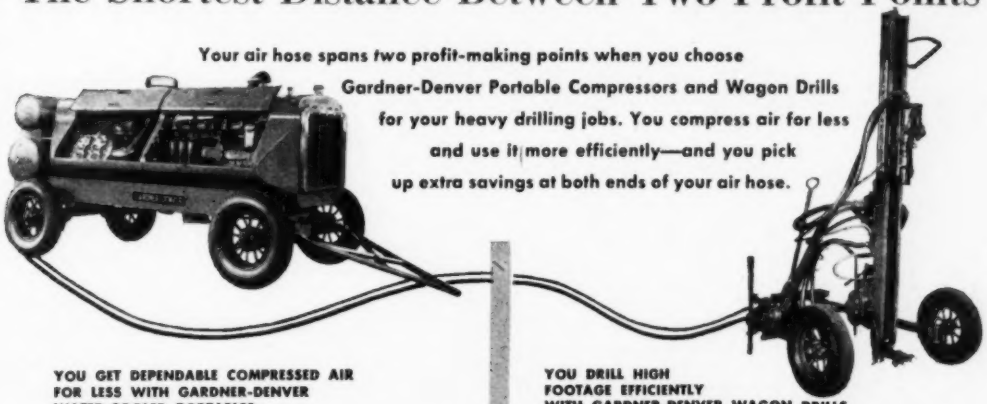
HARNISCHFEGER CORPORATION

EXCAVATORS • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • CRAWLER AND TRUCK CRANES • DIESEL ENGINES • CANE LOADERS • PRE-ASSEMBLED HOMES



The Shortest Distance Between Two Profit Points

Your air hose spans two profit-making points when you choose Gardner-Denver Portable Compressors and Wagon Drills for your heavy drilling jobs. You compress air for less and use it more efficiently—and you pick up extra savings at both ends of your air hose.



YOU GET DEPENDABLE COMPRESSED AIR FOR LESS WITH GARDNER-DENVER WATER-COOLED PORTABLES

- Fully water-cooled compressor cylinders assure proper lubrication in cold weather—cooler operation in hot weather.
- Two-stage compression delivers full capacity at any altitude.
- High efficiency air cleaners protect against wear.
- Deep oil sumps in engine and compressor provide positive lubrication on hills.

YOU DRILL HIGH FOOTAGE EFFICIENTLY WITH GARDNER-DENVER WAGON DRILLS

- Very flexible — easily adjusted for faster hole spotting.
- Handy controls enable the operator to drill more efficiently.
- Powerful automatic blowing keeps the deepest holes clean—encourages more frequent cleaning for faster drilling.
- Long steel changes reduce steel handling time.
- Write for further information.

SINCE 1859

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., Toronto, Ontario

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

Barber-

Redi-Fab series

BELT CONVEYORS

EASY SELECTION FROM CATALOGED UNITS

Experience has shown that most of your belt conveyor requirements are met by units that form a specific segment of the vast Barber-Greene Conveyor line. That segment is the Redi-Fab series—the conveyor items you most frequently need. These conveyors have been engineered and conveniently cataloged in a wide variety of small increments of width, length and horsepower. Redi-Fab series components—truss sections, drives, takeups, power units, handrails and complete accessories—are "packaged" for off-the-shelf delivery.

FAST QUOTATION, DELIVERY, ERECTION

Actually, you can select your Redi-Fab Conveyors, and order the proper components, directly from Catalog RF —an entirely new approach to conveyor selection. Better still, work with your B-G distributor representative. Without costly time-consuming engineering, you can choose the conveyor that exactly meets your needs. Quotation and delivery are faster because you select from standard, pre-built units normally available from distributor or factory stock. Erection is simpler—all units are delivered clearly marked for fast, easy assembly.

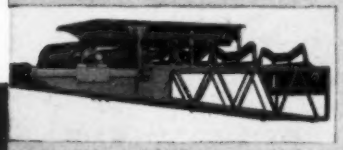
NOW More than ever, machines must be used most effectively. Redi-Fab Conveyors offer the fast, sure way to release shovels, cranes, tractors and the like for more productive work — to minimize manpower requirements and increase productivity. Send for your copy of Redi-Fab Catalog RF.

see your B-G distributor

Greene

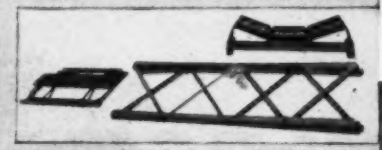
"PACKAGED" UNIT CONSTRUCTION

HERE ARE TYPICAL REDI-FAB PACKAGES...



Foot End—available factory-assembled, or in "packaged" components

Head End



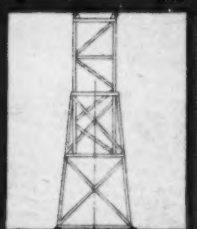
Intermediate Section—panel package, frame package and carrier

Redi-Fab "packages" are logical, convenient groups of parts—or factory-assembled components packed or bundled for individual shipment. This saves shipping costs, simplifies stocking, ordering, erection and future alterations.

All packages are clearly marked for easy assembly. All the engineering has been done at the factory. Your Redi-Fab Conveyor can be assembled quickly by a few semi-skilled men.

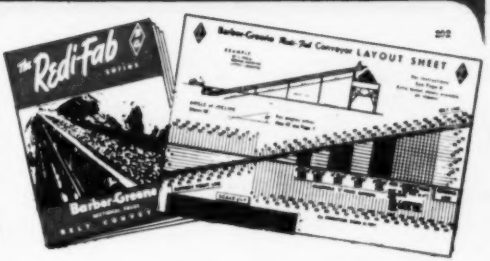
WIDE CHOICE OF COMPONENT EQUIPMENT & ACCESSORIES

1—DRIVES: All requirements may be driven from conveyor power unit or from take-off on crusher, or other equipment.
2—FEEDERS: Standard "packaged" belt, reciprocating and apron feeders (shown), auxiliary hoppers.
3—B-G BELTS: Highest quality synthetics that piled for true running long life.
4—B-G CARRIERS: Have interchangeable rolls, all-steel, jig-welded base.
5—BACKSTOPS, over Redi-Fab series inclusive backstops, belt scrapers, auxiliary feeding hoppers, grease pipe extensions.
6—ADJUSTABLE A FRAMES: Fit any Redi-Fab width; adjustable through 6" range in 2" increments. Hinged connection simplifies A frame to truss. Also complete selection of Head & Trusses.
7—TROUGH SECTIONS: Include truss, troughing and return carriers, decking, walkway supports and A-frames.



send for Redi-Fab catalog

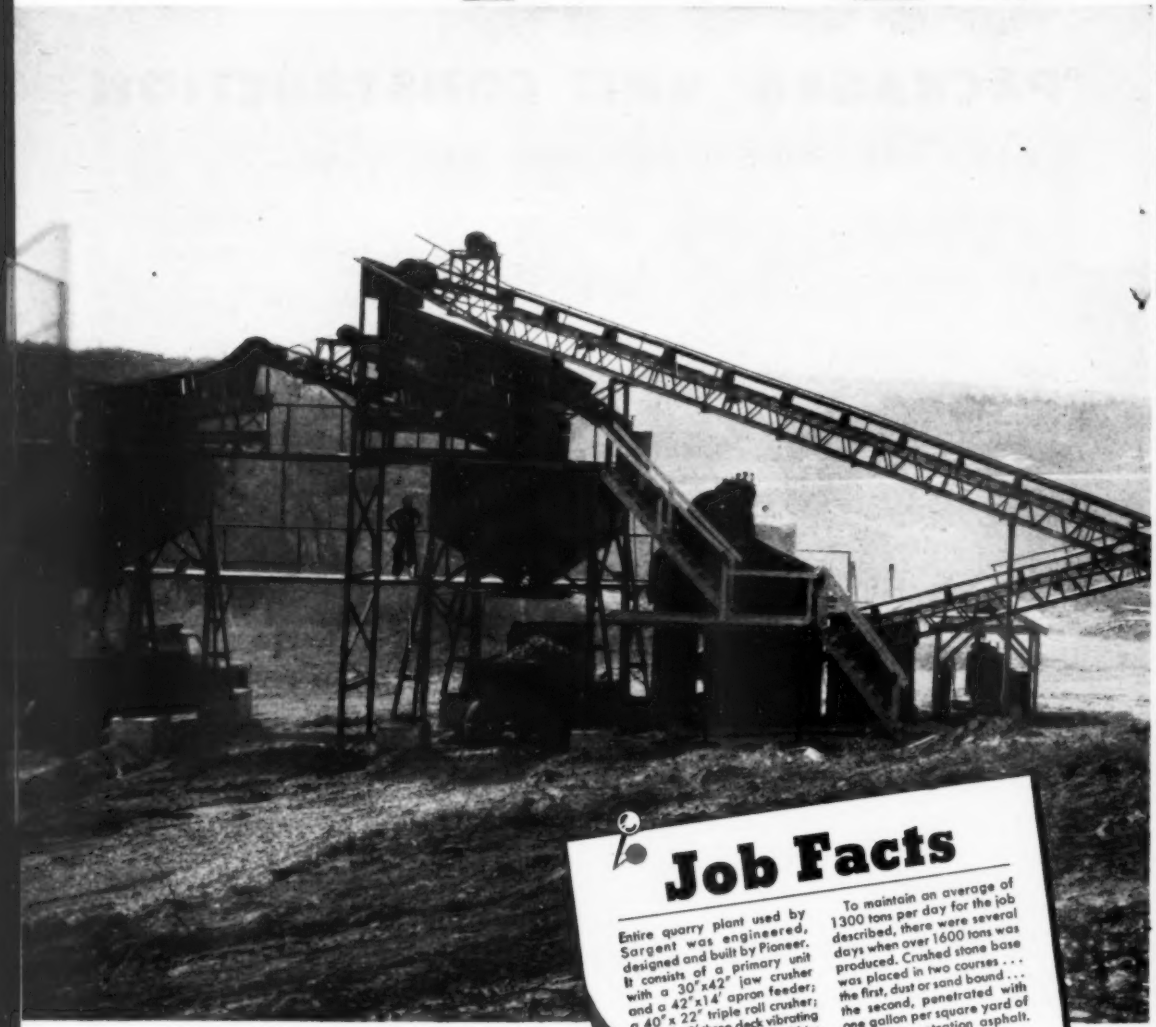
The new 40-page catalog makes it simple for you to figure your own conveyor requirements if you wish. No knowledge of horsepower required. The catalog makes possible the proper selection of the conveyor with the correct size of drive and motor. In fact, with the new layout sheet in the Redi-Fab Catalog, you can make your own layout—accurately, down through all details including locating the A-frame supports. Write for your copy, or ask your B-G distributor.



BARBER-GREENE COMPANY
AURORA, ILLINOIS, U. S. A.

When you're racing time...

that Pioneer Edge



Job Facts

Entire quarry plant used by Sargent was engineered, designed and built by Pioneer. It consists of a primary unit with a 30"x42" jaw crusher and a 42"x14' apron feeder; a 40" x 22' triple roll crusher; a 4'x10' three deck vibrating screen; two 20 yard bins and 95' of conveyor.

To maintain an average of 1300 tons per day for the job described, there were several days when over 1600 tons was produced. Crushed stone base was placed in two courses . . . the first, dust or sand bound . . . the second, penetrated with one gallon per square yard of 85-100 penetration asphalt.

BUY BOTH!
HIGHER OUTPUT
LOWER UPKEEP

Pioneer

Continuflo EQUIPMENT

will help you win

Helps contractor make up for late start on Vassalboro-Winslow Project

LOST TIME often *can be* regained . . . when you have Pioneer equipment to help you out! H. E. Sargent, Stillwater, Maine, had from June 20 to August 16 to prepare the base for 9.14 miles of roadway. This required 37,000 tons of crushed stone, 42,000 cubic yards of gravel. It meant a crushing job averaging 1300 tons a day . . . producing four sizes of stone. This job was done and done on schedule . . . despite a late start and heavy traffic and dust conditions . . . through the use of Pioneer equipment.

Pioneer plants have the built-in ruggedness and extra capacity that respond to the needs of the job and the hands of the good operator.

HAVE THAT

Pioneer Edge

WHEN YOU BID

Who gets the job when bidding is close? The operator who can get the most in production per hour, per dollar, per machine, per man. Have that Pioneer Edge on your side! Send coupon for more facts and figures.

PIONEER ENGINEERING WORKS

1515 Central Avenue • Minneapolis 13, Minnesota

● Please send me information on the equipment checked.

☐ GRAVEL PLANTS	☐ WASHING PLANTS	☐ MECHANICAL FEEDERS
☐ ROCK PLANTS	☐ BITUMINOUS PLANTS	☐ VIBRATING SCREENS
☐ JAW CRUSHERS	☐ APRON FEEDERS	☐ BUZZER SCREENS (LIGHT DUTY)
☐ ROLL CRUSHERS	☐ ORO FEEDERS	☐ CONTINUFLO CONVEYORS

Name _____

Company _____

Address _____

City _____ *Zone* *State* _____

INTRODUCING

ON DISPLAY — BOOTH 87 — CHICAGO NATIONAL SAND & GRAVEL, NATIONAL CRUSHED STONE CONVENTIONS.

STERLING JAW CRUSHER

SIZES

60" x 48" to 10" x 7"

ENGINEERING DATA:

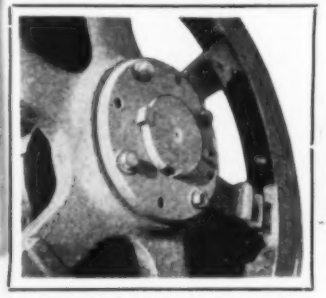
Drastic weight reduction with increased strength determined and checked by electric strain gage field analyses. Results 60% less weight and 50% greater strength.

Frames are of alloy cast steel, one-piece rib type "A" frame flanged construction providing much greater strength with exceptional reduction in weight. This allows handling by usual quarry facilities. Crusher is designed with many exclusive features as enumerated below. These features are developed as the result of exhaustive tests. Faults common to other crushers are now eliminated.

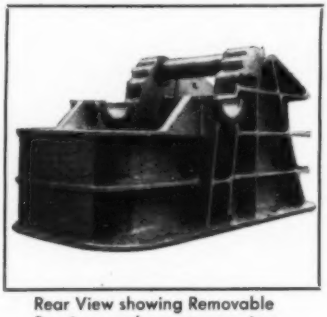
STERLING crushers offer vastly improved ease of operation, mechanical advancement and LOW power consumption. All units equipped with locking type swing jaw shaft. Taper bushings facilitate rapid removal of flywheels. Oil lubrication permits continuous year round operation.

Prices, deliveries and specifications upon request.

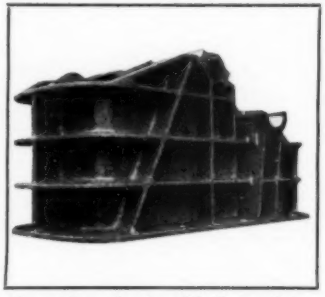
REDUCED COSTS in the face of rising prices



Tapered Bushing for ease of removing flywheels



Rear View showing Removable Bearings and new type swing Jaw shaft



Front View showing Rib Type "A" Frame Flange Construction

Exclusive STERLING FEATURES

- WATER ELIMINATED.
- CIRCULATING OIL LUBRICATION.
- LOCKING TYPE SWING JAW SHAFT.
- REMOVABLE ECCENTRIC BEARINGS.

BACON-PIETSCH CO., INC.
149 BROADWAY • NEW YORK 6, N. Y.
Engineers and Manufacturers
CRUSHERS & FEEDERS
Digby 9-3620 Digby 9-3621

- TAPERED BUSHINGS IN FLYWHEELS.
- JAW PLATE EMBOSSING ELIMINATED.
- NEW CONTROL OF JAW SETTING.
- ALLOY STEEL CONSTRUCTION.

All Types of Bacon-Farrel Crushers can be altered to incorporate the above features.

Sinclair Litholine **PROVED** *in wheel bearing tests*

● The critical test of any multi-purpose grease is in its performance in the wheel bearings of heavy-duty mobile equipment. Sinclair LITHOLINE® Multi-Purpose Grease has been proven an outstanding heavy-duty wheel bearing lubricant in exhaustive year-round tests.

One test was made in a Mid-West city bus line. An inspection after 20,000 miles showed the bearings were smooth and well-lubricated. There were no signs of scratching, pitting, heat spots, gum or varnish. Sinclair LITHOLINE's original character was well-maintained – there was no slumping in the bearing or housing, no softening or liquefying, no separation and no leakage through seals.

This safe, sure lubrication of one of the most vital points of heavy-duty mobile equipment . . . and its outstanding performance at all other lubrication points . . . prove that Sinclair LITHOLINE is a real multi-purpose grease . . . winter and summer.

Send for a free folder describing demonstrations of the superiority of LITHOLINE. Contact your local Sinclair Supplier or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

for every grease lubrication job... **SINCLAIR** **LITHOLINE**

Crusher Jaws Rebuilt with Coast Metals Hard-Facing
REMAIN ON THE JOB AFTER 8 YEARS

CM-112 Hard-Facing Welding Rod Increases Jaw Life Per Facing 4 to 1

A large southern mineral company has found the way to keep these crusher jaws on the job year after year. It rebuilds them with Coast Metals Alloy No. 112.

The jaws are used for crushing feldspar. They operate, on an average, 8 hours per day, and crush approximately 22,000 tons annually.

Despite the rugged nature of the operation they handle, and the volume of material processed, these jaws are giving as efficient service today as when they first went to work 8 years ago. Not only has over-all jaw life been greatly increased, but, with CM-112, working surfaces *need only be coated 3 times a year*—in contrast to 12 times previously.

Many other hard-surfacing materials have been tried by the mineral company, but results achieved by CM-112 have proved *outstanding.*

Let us show you how CM hard-facing alloys can meet your requirements. Whether it be bucket teeth, crusher teeth, muller tires, augers—or any other part that must withstand severe wear and tear—and you'll find coating with CM specialized weld rods results in *many times the production obtainable from unfaced units.*

So don't *replace—reface* with CM Alloys. You'll minimize downtime, slash maintenance costs, keep your production running smoothly, step up your output.

COAST METALS, Inc.
Little Ferry, N. J.

COAST METALS (CANADA), LTD., Hamilton, Ontario

PRODUCERS OF SPECIAL HARD-FACING ALLOYS FOR THE ROCK PRODUCTS INDUSTRY

IT COSTS LESS ... TO OWN THE BEST!

KENNEDY GYRATORY CRUSHERS CANNOT BE IMITATED!

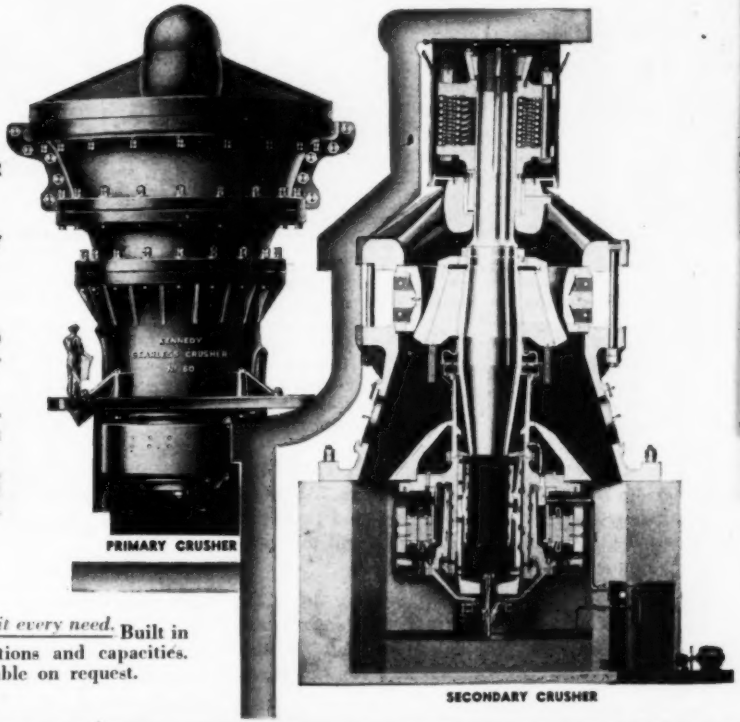
Powerful, rugged crushers with the stamina of a heavy-duty tank. Built to handle every type of raw material, swiftly, dependably, economically. More tonnage for less horsepower.

Delivers maximum output of crushed rock in minimum time. Engineering principles and durable construction assure freedom from costly "down time" for adjustment and maintenance. Built of chemically tested steel; equipped with the finest oiling system money can buy.

A real producer that pays dividends in satisfaction, uniformity of crushing, dependability. Send for bulletins describing KVS crushers.

CONSIDER THESE EXCLUSIVE FEATURES:

- SYNCHRONOUS MOTOR BUILT INTO PULLEY ASSEMBLY:
- POWER APPLIED ONLY FOR CRUSHING: NO GEARS TO WASTE POWER:
- ADDED POWER AT NO EXTRA COST: FORCE-FEED LUBRICATION:
- QUIET, SMOOTH, FRICTIONLESS OPERATION:
- GREATER CAPACITIES, SIZE FOR SIZE, THAN ANY OTHER CRUSHER.



PRIMARY CRUSHER

SECONDARY CRUSHER

There's a KVS crusher to suit every need. Built in sizes to meet any specifications and capacities. Full engineering data available on request.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE, NEW YORK 16

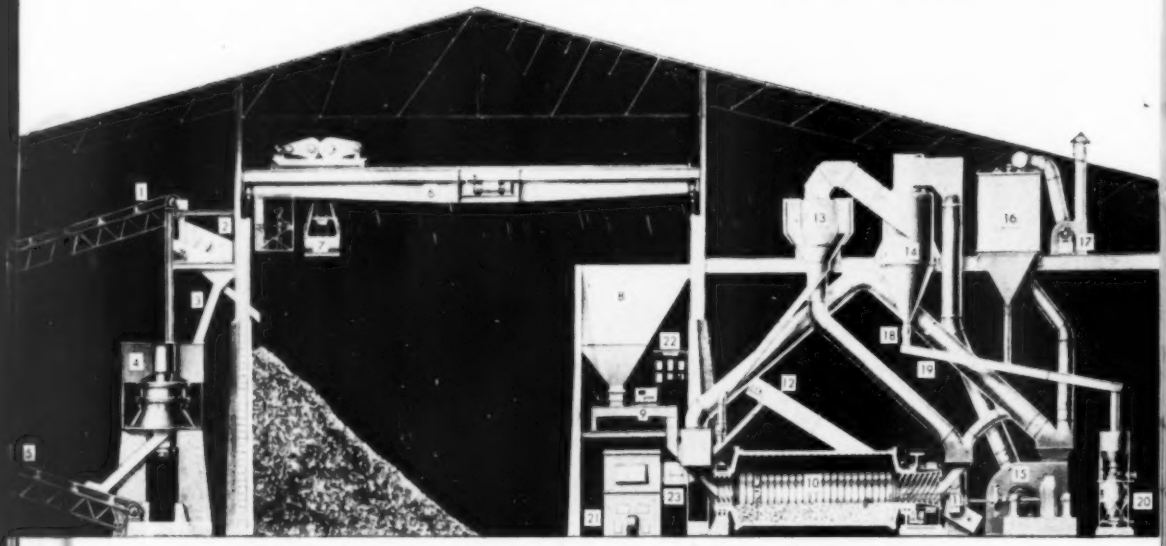
FACTORY: DANVILLE, PA.

KENNEDY STRATIFIED AIR SWEPT TUBE MILL SYSTEM

(Patents Pending)

WITH DUAL CLASSIFICATION

for raw stone, ore and clinker grinding lowers grinding costs...reduces power consumption...cuts maintenance costs



1 Belt conveyor—feed to crusher
2 Vibrating screen
3 Oversize return chute
4 Gearless gyratory crusher
5 Belt conveyor—closing crusher circuit
6 Traveling crane
7 Clamshell bucket
8 Mill feed hopper
9 Weighing feeder
10 Stratified Air Swept Tube Mill
11 Cross conveyor for oversize
12 Return conveyor for oversize
13 Radial flow classifier
14 Cyclone collector
15 Mill exhauster
16 Dust filter
17 Dust filter exhauster
18 Rotary air locks
19 Finished material conveyor
20 Finished material to storage silo
21 Hot air furnace
22 Instrument and control cubicle
23 Automatically controlled tempering air damper

The Kennedy Stratified Air Swept Tube Mill System produces 94% plus through 325 mesh when grinding clinker 2 inches and finer. It dries and grinds simultaneously and air-cools cement while grinding clinker.

In our test plant, when grinding to 92% through 200 mesh, 25 tests showed an increase in the capacity of the Tube Mill by the use of Dual Classification of from 29% to 52%.

The Kennedy Stratified Air Swept Tube Mill not only grinds raw material having up to 20% moisture, but becomes a combined dryer, grinding mill and separator, thereby serving a three-fold purpose.

Marked economy of operation sets the Kennedy mill apart. By comparison, the savings effected in power consumption, wear-and-tear and man-hours, more than pay the initial installation cost within a ten-year or shorter period. Send for blueprints and operating data. They show why users say "It Costs Less To Own The Best."

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION
TWO PARK AVENUE, NEW YORK —:— PLANT: DANVILLE, PA.

IT COSTS LESS . . . TO OWN THE BEST!

KENNEDY SWING JAW CRUSHERS

Convert large size rock into Easy-to-Handle Screen Sizing Swiftly and Economically.

KVS heavy duty Swing Jaw Crushers are engineered, and built, to handle large size rock. Frames are built of Herculite Steel or annealed open hearth cast steel; these crushers exert brute force where it counts . . . Convert raw materials into easy-to-handle screen sizes.

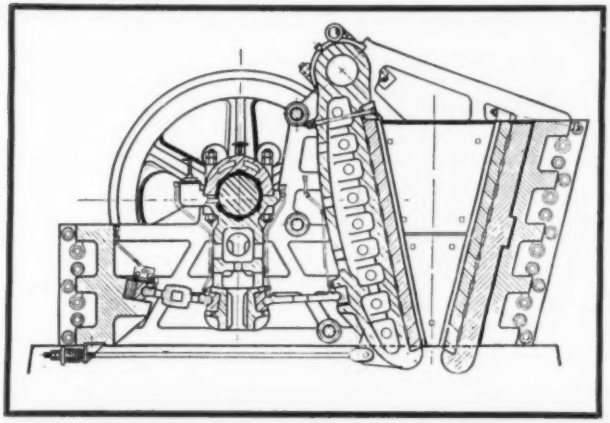
One stationary, one swing jaw, set at the same angle, divide the crushing impact equally. This means much less power for swinging and crushing . . . a more uniform size product at a lower cost per ton and greatly reduced jaw wear.

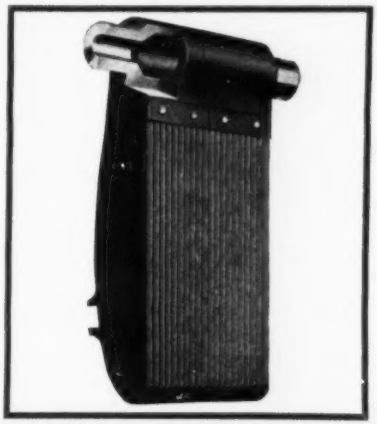
Jaw plates are reversible, end for end and from stationary to swing jaw, providing double life by cutting wear in half. Easy to remove, easy to reset. Swing jaw, including the bearings, are made of annealed open hearth cast steel and have been in use for 10 years with no failures. Kennedy Swing Jaw Crushers are built in 40 different sizes . . . up to 66" x 96" . . . to meet every need of the aggregate industry. Chemically tested steel plus superior engineering make them the finest crushers money can buy.

Send for bulletins describing all KVS crushers. There's a size to serve *your* needs.

FEATURES THAT DISTINGUISH KVS SWING JAW CRUSHERS

- Crusher openings from 7 inches to 66 inches.
- Sizes from 6000 to 600,000 pounds. Swing jaw and shaft cast integral. Cannot loosen.
- Frames built of Herculite Steel, or annealed open hearth cast steel, with a tensile strength up to 60,000 lbs. per sq. inch.
- Reversible, end for end, or from stationary to swing jaw. Swing Jaws provide double usual life.





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TWO PARK AVENUE NEW YORK 16
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IT COSTS LESS TO OWN THE BEST!

Kennedy Cataract Type Vibrating Screen

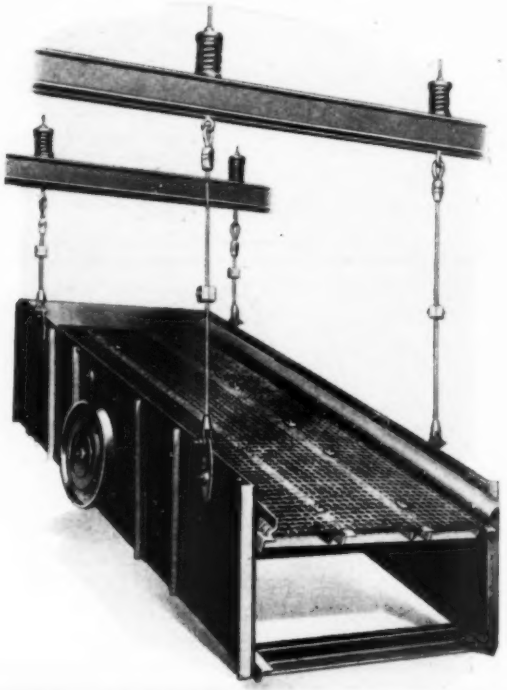
SPECIAL TYPE OF SUSPENSION SAVES SPACE AND WEIGHT—

The improved K V S Cataract screen can be used at many places where the weight of regular type vibrating screens would present a serious problem. Designed by K V S engineers, type "AAA" has specially mounted spring suspension to reduce weight and space and still retain rugged strength. Working mechanism is *strong* — Nothing sacrificed from a practical standpoint — Rugged construction withstands vibration and jar without strain.

Built in sizes from 2' x 4' to 5' x 14'. Equipped with 1, 2 or 3 decks, screen cloth may be readily changed due to simplified method of fastening. Screens all types of materials economically and efficiently.

All parts easily accessible for adjustment or maintenance. Screen can be set at any desired angle. Operates at variable speeds to suit capacity or type of product being screened. Covered Model, to prevent escape of dust, available in all sizes.

Send for Bulletin describing KVS Type "A" "AA" and "AAA" Screens



KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE, NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

Announcing

THE V. A. O. BLASTING METER

manufactured by Roller-Smith Company, Bethlehem, Pennsylvania

A combination voltmeter, ammeter, and blasting galvanometer for practical field use

The V. A. O. (volts-amperes-ohms) Blasting Meter, embodying design features suggested by Hercules explosives engineers, marks a major development in the field of blasting instruments. Important features of the V. A. O. Blasting Meter are:

1. It contains the necessary electrical components, adjusted to specific ranges, for checking stray currents and voltages around blasting operations.
2. It is equipped with a rectifier and, therefore, can be used for detecting either alternating or direct current and voltages.
3. It can be used as a blasting galvanometer for checking the circuit of individual electric detonators or detonators connected in series.

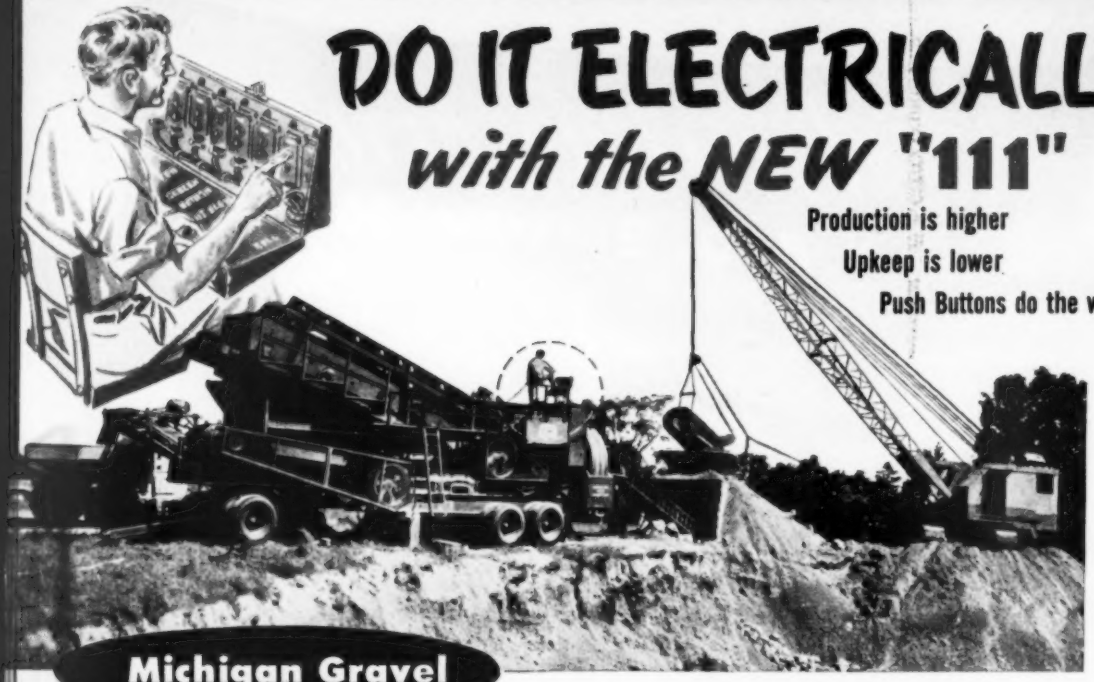
See booklet, which will be furnished on request, describing the V. A. O. Blasting Meter and giving instructions regarding its use. This instrument is now available through Hercules representatives.

HERCULES POWDER COMPANY Explosives Department, 960 King Street, Wilmington, Delaware

XR52-1

DO IT ELECTRICALLY
with the NEW "111"

Production is higher
Upkeep is lower
Push Buttons do the work

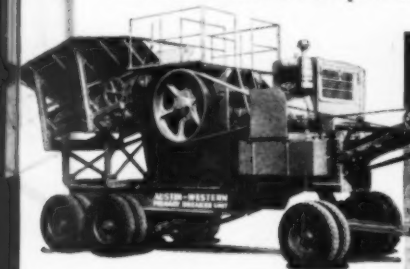


Michigan Gravel

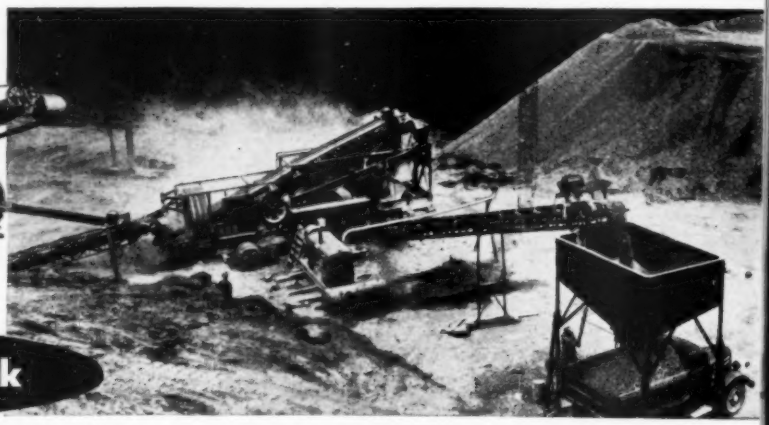
Production is higher—because each unit has its own electric motor drive; thus operates at top speed and efficiency at all times.

Upkeep is lower—because drives are simple and have few parts.

Push buttons do the work—the man on the platform starts and stops the feed and delivery conveyors, and has other units under complete control.



Primary Breaker units are made in several sizes; this one has a 3' x 10' apron feeder, 20" x 36" jaw crusher, power unit and delivery conveyor—all mounted on pneumatic tires.



Carolina Rock

The high production "111," with its 10" x 36" jaw and 40" x 24" roll crushers, is equally at home in gravel and rock. On this quarry job, production is still further increased by using a Primary Breaker unit with 32" x 40" jaw crusher (not visible in the photograph) to reduce the oversize to about 5 inches.

AUSTIN-WESTERN COMPANY · *Subsidiary of Baldwin-Lima-Hamilton Corporation* · **AURORA, ILLINOIS, U.S.A.**

Austin-Western

BLH BALDWIN-LIMA-HAMILTON

We Engineered the Mechanical Advantages Of Big Shovels into the Dempster-Diggster

The Dempster-Diggster's ability to dig hard and stratified materials without shooting is shown in photo at right. Note ample loading clearance. Dempster-Diggster, shown at work in Florence, Ala., is the Type GRD, Model 100.

This Dempster-Diggster, shown at work in Creighton, Pa., is also loading hard and stratified material without shooting. It is the Type CR, Model 100.

The Type GRD, Model 100-HL is shown above loading Hopper Bottom car, height of which is 10'8" from rail to top of car.

Simultaneous Independent Hydraulic Crowding and Hoisting, Variable Crowd Action at Any Dipper Position and Changeable Buckets are engineered into the Dempster-Diggster. Many of the present Dempster-Diggster owners were at one time in the same position you may be in today. They needed front end loaders, but they also needed shovels that could dig out 15 to 18 foot banks. The versatility of the Dempster-Diggster, plus its economical and efficient operation, left them with only one choice. In the first place, the Dempster-Diggster can do anything a conventional front end loader can do—and do it faster and at less cost! Second, on big jobs the Dempster-Diggster is without equal for working in tight places. The Dempster-Diggster is available in either of two types of traction—pneumatic (Type GRD) or crawler (Type CR). Both types are supplied in two models—the Standard (Model 100) or High Lift (Model 100-HL). Our new catalog No. 1032, with over 35 illustrations and complete specifications, shows how this revolutionary shovel can cut your costs tremendously. For your copy fill in the attached coupon and mail today!

DEMPSTER DIGGSTER

Please send me, without obligation, your Dempster-Diggster Catalog #1032.

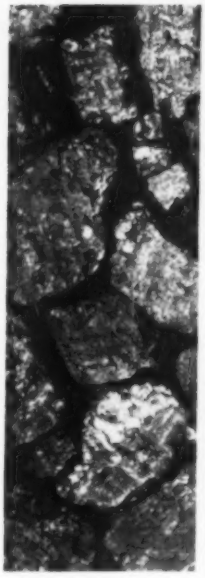
Name_____

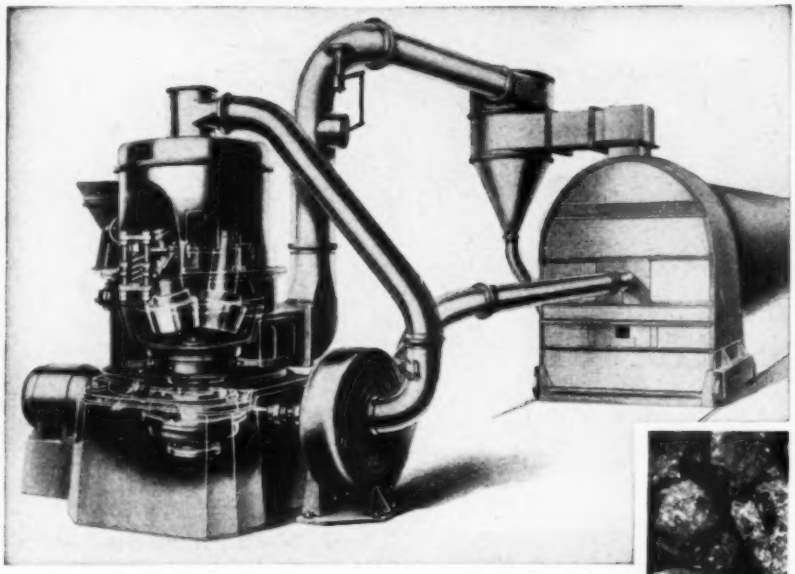
Address_____

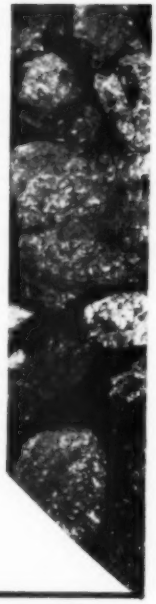
City_____ State_____

DEMPSTER BROTHERS, 212 Knox, Knoxville 17, Tennessee

The "1952" Raymond BOWL MILL







Well over 260 Bowl Mills have been installed for kiln firing alone, since the first original unit went into operation in 1935.

This 17-year record has definitely proved the ability of the Bowl Mill to show consistent savings in the production of cement clinker, lime and dead-burned dolomite, while maintaining product-quality of top specifications.

Raymond BOWL MILL Catalog No. 62 sent on request

Continuous improvements are being made in design and construction, year after year. The "1952" Bowl Mill combines the latest engineering refinements and operating features. This modern direct-firing unit offers new advantages in coal grinding economy and kiln efficiency.

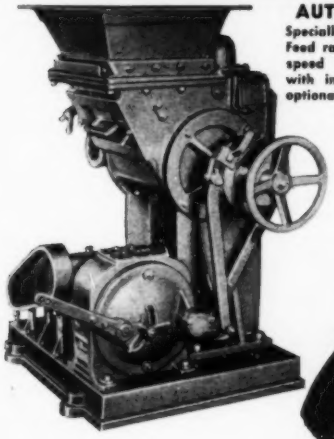
If you have a rotary kiln application, write us for further details of this automatically controlled direct-firing Bowl Mill system.

COMBUSTION ENGINEERING

Raymond

PULVERIZER DIVISION

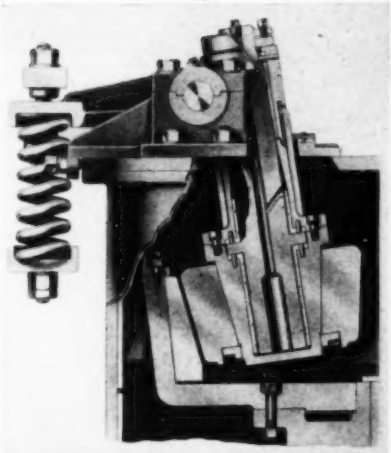
—a Complete Modern System of Coal Grinding and Kiln Firing



AUTOMATIC FEEDER
Specially built for the Bowl Mill. Feed rate regulated by adjusting speed of drive-mechanism . . with indicator on panel board, optional.

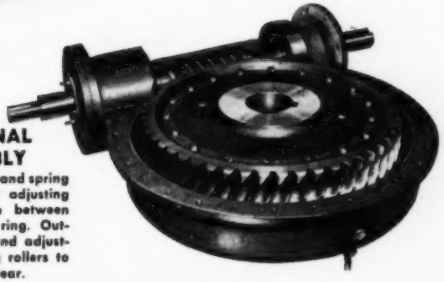
CONTROL PANEL
Provides a complete operating picture of Bowl Mill and Kiln at all times. One or several mills may be controlled from single station.

Raymond
FEATURES
of
BOWL MILL
CONSTRUCTION



WORM GEAR DRIVE
Precision-built drive assembly gives long service life and smooth, quiet, vibration-free operation. Entire unit runs in bath of oil.

JOURNAL ASSEMBLY
Showing trunnion and spring mechanism for adjusting grinding pressure between rollers and bull ring. Outside lubrication and adjustment for aligning rollers to compensate for wear.

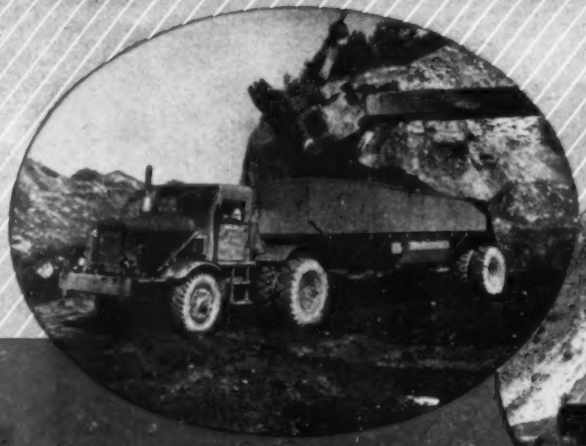


—SUPERHEATER, INC.

1321 North Branch Street, Chicago 22, Illinois

Sales Offices in Principal Cities

BOWL MILL



In Mines and Quarries "EUCS"

HAUL MORE TONS AT LESS COST

Built for tough off-the-highway hauling, Rear-Dump and Bottom-Dump "Eucs" have stepped up production and cut hauling costs on hundreds of open pit mining and quarry operations.

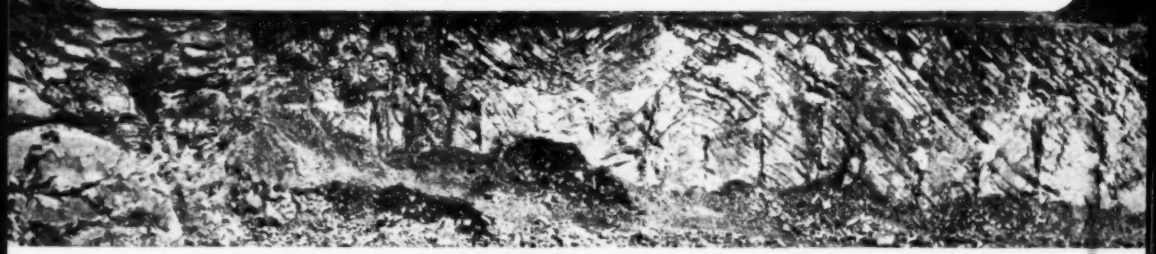
Euclids have proved their efficiency and long life in hauling a wide variety of materials . . . coal, ore, rock, overburden and other heavy excavation. Bottom-Dumps are powered by diesel engines of 190 to 300 h.p. . . . loaded speeds up to 34.4 m.p.h. . . . available in 20 to 40-ton capacities. Rear-Dump "Eucs" have travel speeds up to 36.3 m.p.h. . . . powered by diesel engines of 125 to 400 h.p. . . . range in capacity from 10 to 34 tons.

Your Euclid Distributor has performance data on jobs similar to yours. Ask him for a Euclid hauling cost estimate — there's no cost or obligation.

The EUCLID ROAD MACHINERY Co. • CLEVELAND 17, OHIO

EUCLIDS *Move the Earth*

Typical "Nitramon" blast gives splendid fragmentation in stratified limestone quarry

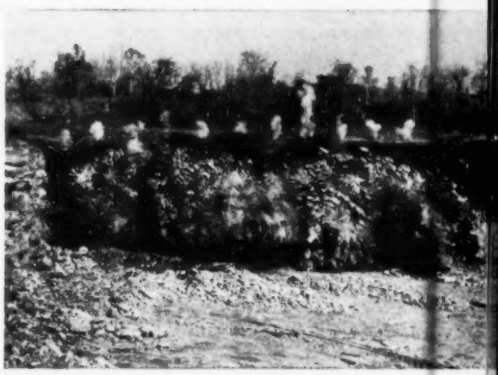


1. Face of southern limestone quarry shows boulder-like formation at top with badly folded and stratified rock pitching 50°. Shots must be carefully planned to shear the bottom and maintain proper floor level.

2. Loading Du Pont "Nitramon"* in well drill holes for blast presents no problem . . . provides maximum safety. Note preparation of "Nitramon" Primer in background.

DU PONT "NITRAMON" is ideal for quarry blasting. It's safe. It's convenient. It's easy to load and packed in watertight metal containers. It saves time and helps lower over-all quarrying costs. The Du Pont Explosives representative in your area will gladly give you complete information about "Nitramon" . . . the safest blasting agent known. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

*Registered trade-mark for nitrocarbonitrate blasting agent



3. Shot was fired with holes going at milli-second intervals to create "peeling action" and reduce vibration.

4. Excellent fragmentation produced by "Nitramon" blast reduces secondary blasting to a minimum. Spreading action of Du Pont "Nitramon" shears the bottom and keeps the floor level where it belongs.

DU PONT "NITRAMON"

DU PONT
REG. U.S. PAT. OFF.

A Product of Du Pont Explosives Research

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

VOL. 44 JANUARY 1952 No. 7

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CHICAGO BUSINESS OFFICE
431 S. Dearborn Street
Chicago 5, Illinois
Telephone HArrison 7-8558

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NEW YORK OFFICE
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New York 17, New York
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PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

PIT AND QUARRY

In this issue

Editorials 76
News of the Industry 79
Convention Programs 86
Idaho Portland's Inkom Plant to Have 3,000-Bbl. Daily Output 91
Waterbury Sand & Gravel Co.—Successful Massimo Venture 93
Washington News Letter 94
Permanente's Dust Nodulizing Process Effects Economies and Higher Output 96
Unique Plant Design Results in Versatile Crushing Operation 99
Screenings 102
Construction Review and Forecast—1951 Dollar Volume Set Record 106
Cement Review and Forecast—1951 Fifth Straight Peak Year 117
Aggregates Review and Forecast—Output at Record Level Last Year 129
Other Non-Metals Review and Forecast—Output in 1951 Generally Gained 133
Report on Current Labor Developments 138
Dry Screening Setup Proves Successful at Russo Plant 139
Crushed Stone Boom in Middle Tennessee 140
A.S.T.M. Committees on Cement and Concrete Meet at Purdue 162

The Concrete Manufacturer

Editorial 237
News of the Industry 239
Convention Programs 240
American Concrete Pipe Association Attracts 115 to First Short Course 243
Variations in Apparent Specific Gravity 247
Survey Indicates Block Output Set New Record in 1951 248
Producers Report Ready-Mix Industry Turned Out 36,000,000 Cu. Yd. Last Year 252
Output of Concrete Pipe Soared to Over 10,000,000 Tons in 1951 254
Pine Hill Enlarges Ground Storage Capacity for Aggregates, Installs Dust Collectors 256

More Information Please 153
New Machinery Review 165
Personal Mention 178
Trade Notes 182
Legal Decisions 190
Traffic News 196
Index to Advertisers 318

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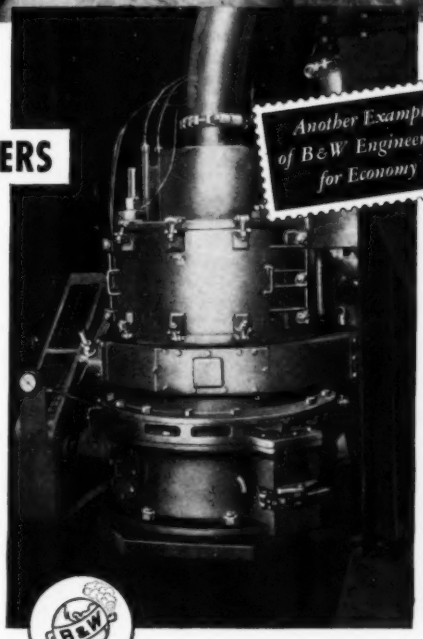
AT BUCKITE REFRACTORIES

direct-fired by B&W PULVERIZERS



Another Example of B&W Engineering for Economy

Buckite Refractories, Inc., Woodville, Ohio, uses B&W Pulverizers to get maximum production from each of its three rotary kilns. Newest and largest of these kilns, an 8-ft. 6-in. by 160-ft. unit, is direct-fired by a B&W Type E-26 Pulverizer. This new kiln has increased Buckite's total production 60 to 65 per cent. Fuel economy has consistently exceeded expectations.

B&W Pulverizers employ the ball-bearing grinding principle. Coal of uniform fineness, consistently delivered at a uniform rate, is the result. High availability, low maintenance costs, and close, one-point control of coal-air ratio and volume are additional features of B&W installations. B&W coal pulverizing equipment assures long-lasting, dependable service for any type or size kiln. The Babcock & Wilcox Company, 85 Liberty Street, New York 6, N. Y.

B&W

BABCOCK & WILCOX

C-111

editorial

Cement Industry Continues Record Expansion

IN 1951 the cement industry in the United States expanded its producing capacity by many millions of barrels annually in order to be able to supply increasing construction demands, and to eliminate any possibility of future shortages. Similar expansions in capacity had been made in each of the last several years of increasing cement demand but, impressive as these additions were, demand increased more rapidly, causing serious shortages in some areas. With the existing feeling early in the year that 1951 would probably not exceed and probably would be under 1950 in cement demand, it took courage for the industry to go ahead with its expansion plans in the past year. With 1952 prospects indicating a falling off from the 1951 record demand, and with higher taxes insuring lower net profits, the cement industry has not been deterred from again going ahead with an expansion program of possibly even greater magnitude than in previous years.

There is no accurate information available as yet, but in our review and preview of the cement industry in this issue we estimate that the new capacity built in 1951 was about 12,000,000 bbl. or about 4.6 percent of the official capacity of 259,448,000 bbl. at the beginning of the year. Three new plants were built and at least 20 plants completed major expansion programs, adding a total of 12,000,000 bbl. annually to the capacity of the industry. These programs included the installation of 13 new kilns. Minor expansions made in other plants must have added several hundred thousand barrels to these totals. Even allowing for the fact that some of these installations replaced obsolete equipment, rather than supplementing them, the total capacity gain is impressive.

THERE are now under construction in this country two new cement plants, and two other expansions which are actually new plants, and these will certainly be in operation in 1952. In addition, at least 25 major expansion programs are either under way or are definitely scheduled for completion this year. Together these projects include 19 new kilns. These four new plants will add about 4,100,000 bbl. and the expansions about 11,000,000 bbl. to the annual capacity of the industry by the end of the year. Other new plants and expansions are definitely scheduled for later completion.

It is interesting to note that the three new plants built in 1951, and the two completely new plants now under construction, are located far from any existing plants and in areas which had been forced to pay the highest prices under the existing plant-pricing system, and which for the same reason had suffered the most serious shortages of cement. Four of these five plants are located from 200 to 300 miles from the nearest competitor in any direction and the fifth plant, while only 100 miles from its nearest competitor, is 200 to 350 miles from plants in any other direction. The major expansion programs made in the last several years, or now under way, also affect largely plants located in areas where demand has exceeded supply. In other words, by simply following the laws of supply and demand, the cement industry has dispersed its production facilities to meet changing needs.

THIS is a remarkable effort on the part of one industry to supply the demands of its customers, especially inasmuch as there is no certainty of continued high demand. The cement industry refused to increase its prices materially both before and since World War II, the increase from 1926 through October, 1951, being only 47.2 percent, as compared to 123.6 percent for all other building materials, while cost of production has increased much more rapidly. The result is that the industry must operate at a ridiculously high percentage of capacity in order to show a profit. Profits have been good for a few years, but increased taxes effective late in 1951 caused them to drop sharply in relation to sales and a further sharp drop in profits is certain in 1952 unless price ceilings are raised.

The Shortage of Engineers

ONE of the most serious problems confronting industry today is the growing shortage of engineers. This affects the nonmetallic minerals industries as much as any others, as vast numbers of engineers are required to design, build, and operate plants and other facilities; and these industries also depend on engineers to manufacture the equipment they use and to supervise the use of their products. This shortage will become even more serious in the coming years according to authoritative information.

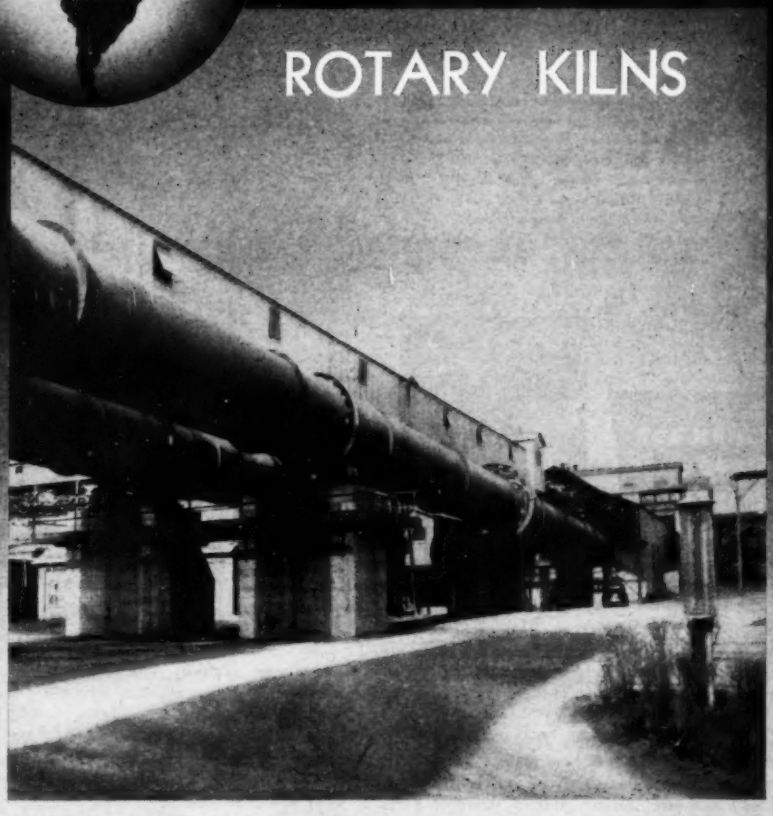
Several exhaustive studies have been made recently, all coming up with the same answer, a serious and growing shortage of engineers. The dean of the college of engineering at a large state university recently stated that, with a national need for 30,000 engineering graduates every year, a shortage of 5,000 in 1952, 21,000 in 1953, and 18,000 in 1954 is to be anticipated.

THIS shortage of engineers may be a temporary condition or it may last for many years; in any case steps must be taken now to correct it. It is believed that trained engineering personnel and talented students should not be diverted into services in which their capabilities would not be fully utilized. Whatever military training is needed by engineering graduates, it is suggested, can be readily given while they pursue their college programs. We all know of instances where young engineers have been, and are being, drafted into the armed forces as line soldiers, sailors, flyers, etc., with no attempt being made to utilize their engineering training. Nonmetallic minerals producers are urged to do what they legally and ethically can to get deferments for their engineering personnel or, if this is not possible, to use their influence with local draft boards to give eligible young engineers an opportunity to serve in the capacities for which their training best fits them.

Walter E. Trunkel

SMIDTH

ROTARY KILNS



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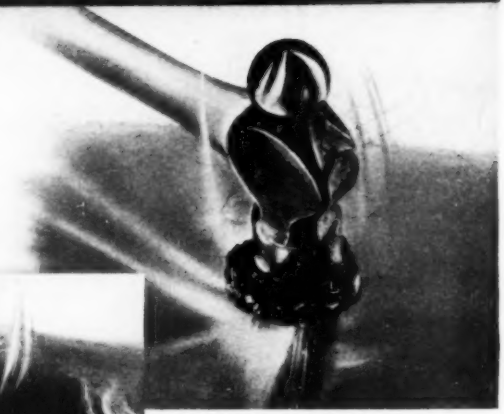

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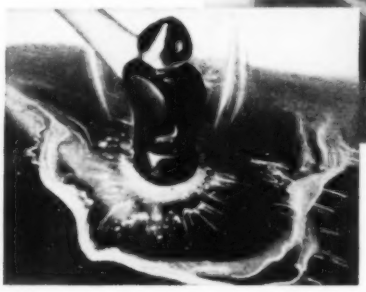

◀ **TRY** the "hammer test" with ordinary grease. Stand back and hit it! Note how it splatters, fails to hold together — proof that ordinary grease soon pounds out of chassis parts, leaves them unprotected, shortens their life. Fleet owners everywhere agree that *Texaco Marfak* gives the best protection under all conditions.

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news of the industry

PIT AND QUARRY

President Names Forbes Bureau of Mines Director To Succeed James Boyd

President Truman has appointed John J. Forbes as the new head of the U.S. Bureau of Mines, succeeding former Director James Boyd, who recently resigned to become vice-president of the Kennecott-Copper Company.

Mr. Forbes was graduated from Pennsylvania State College with a B.S. degree in mining engineering in 1911, and for the next 3 years he worked in various capacities in coal mines in Pennsylvania and Ohio. He then joined the Bureau of Mines as a "first aid" miner at the Pittsburgh station in 1915. During the next 37 years, he served the Bureau successively as foreman miner, junior mining engineer, mining engineer, senior mining engineer, and principal mining engineer.

He was appointed supervising engineer of the Safety Division in 1927, and in 1941 was appointed chief mine inspector of the Bureau to supervise the newly authorized Federal Coal Mine Inspection and Investigations Act. During World War II he was made chief engineer of the Mineral Production Security Division, which involved not only coal mining installations, but also metal and nonmetallic mineral mining, smelting, metallurgical plants, and mines and quarries. Since 1948 Mr. Forbes has been chief of the Health and Safety Division.

He has been associated with the safety work of the Bureau of Mines for 35 years. His appointment has been endorsed by both operators and labor in the mining industry. A familiar figure at first aid and mine rescue meets, he has the approval and support of thousands of mining men in his new work.

John J. Forbes

Merger Is Announced For Dragon, Lawrence— Management to Remain

The Lawrence Portland Cement Company, New York, N. Y., has been merged with the Dragon Cement Company, Inc., New York, N. Y., effective on November 30, 1951. Dragon has taken over the Lawrence plants, offices, and assets. There was no change in management, personnel, or policies.

Directors of the Dragon Cement Company, Inc., have declared a quarterly dividend of 25 cents a share, and a special dividend of 50 cents a share.

Coming Events

January 21-24, 1952 — Houston. Golden anniversary meeting, American Road Builders Association. Rice Hotel.

January 27-31, 1952 — Chicago. 33rd annual meeting, Associated Equipment Distributors. Conrad Hilton (formerly Stevens) Hotel.

February 5 and 6, 1952—Jefferson City. Seventh annual convention, Missouri Limestone Producers Association. Governor Hotel.

February 11, 1952 (week of)—Chicago. 36th annual convention and exhibit, National Sand and Gravel Association. Conrad Hilton (formerly Stevens) Hotel.

February 11, 1952 (week of)—Chicago. 22nd annual convention and exhibit, National Ready Mixed Concrete Association. Conrad Hilton (formerly Stevens) Hotel.

February 18-20, 1952 — Chicago. 35th annual convention and exhibit, National Crushed Stone Association. Conrad Hilton (formerly Stevens) Hotel.

February 18-20, 1952—New York. 32nd annual convention, National Concrete Masonry Association. Hotel New Yorker.

February 18-21, 1952—New York. 79th annual meeting, American Institute of Mining and Metallurgical Engineers. Hotel Statler.

February 26-28, 1952—Cincinnati. 48th annual convention, American Concrete Institute. Netherland Plaza Hotel.

February 27 and 28, 1952—Chicago. Third annual convention and meeting, American Concrete Pressure Pipe Association. Drake Hotel.

February 28- March 1, 1952 — Chicago. 44th annual convention and meeting, American Concrete Pipe Association. Drake Hotel.

March 3-5, 1952—Denver. Second annual convention and meeting, American Concrete Agricultural Pipe Association. The Brown Palace Hotel.

March 5 and 6, 1952—Des Moines. Seventh annual convention, Iowa Agricultural Limestone Association, Inc. Savery Hotel.

April 7-9, 1952—Cleveland. Seventh annual meeting and lubrication show, American Society of Lubrication Engineers. Hotel Statler.

OPS Grants Industry Overriding Regulation 21 For Price Adjustments

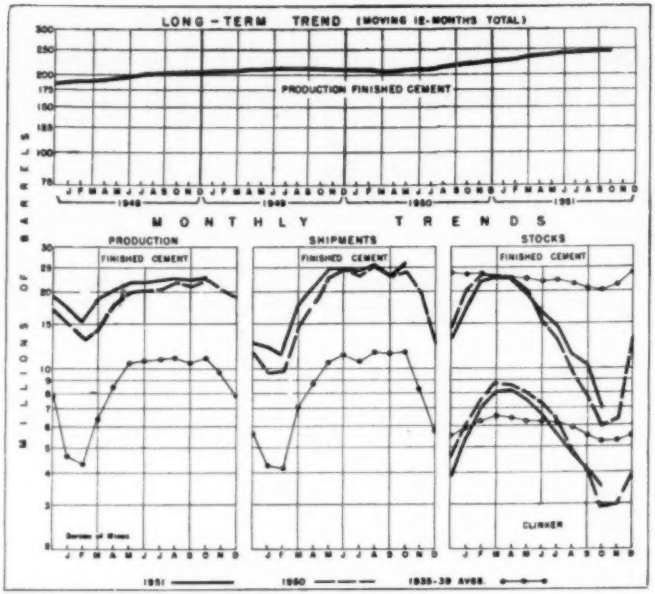
Cheering news came from Washington in Vincent Ahearn's announcement that the Office of Price Stabilization had given the sand and gravel industry the benefit of the Capehart Amendment to the Defense Production Act of 1950. General Overriding Regulation, GOR 21, applies to industries which are still subject to the General Ceiling Price Regulation, and it therefore applicable to this industry.

The new order provides that if net sales were less than $1,000,000 in the last complete fiscal year ended not later than July 31, 1951, the operator should send in an application to the OPS office for the district in which the principal place of business is located. If the dollar volume equals or exceeds $1,000,000 in that fiscal year, the application should be sent to OPS, Washington 25, D. C., attention of the Building Materials Division.

General Overriding Regulation 20 is available as an alternative to companies whose net sales did *not* exceed $250,000 for the last fiscal year ended not later than July 31, 1951. Use of GOR 21 or GOR 20 is optional. Neither regulation sets prices; General Ceiling Price Regulation establishes ceiling prices for the industry. The sole function of GOR 20 or GOR 21 is to provide a procedure under which any eligible business can apply for new ceilings if the operator feels the use of the Capehart formula will be beneficial.

Text of the GOR 21 Statement of Consideration follows:

"This general overriding regulation establishes the basic procedure in accordance with which business concerns will be authorized to apply for an adjustment of their ceiling prices under the so-called Capehart Amendment (section 402 (d) (4) of the Defense Production Act of 1950, as amended). It is the most general of a series of regulations which are being issued for that purpose."



SUMMARY—Production of finished portland cement in October, 1951, totaled 22,797,000 barrels, as reported to the U. S. Bureau of Mines, an output 1 percent greater than in October, 1950. Mill shipments totaled 26,140,000 barrels—an increase of 8 percent over shipments in October, 1950—while stocks of 6,944,000 barrels of finished portland cement were 17 percent greater than those of one year ago. Clinker production during the month was 5 percent higher than in October, 1950, and amounted to 22,398,000 barrels.

PRODUCTION—153 plants located in 36 states and Puerto Rico reported production of 22,797,000 barrels of finished portland cement during the month, as compared to 150 plants which manufactured 22,461,000 barrels in October, 1950. Output of clinker during October, 1951, totaled 22,398,000 barrels—an increase of 5 percent as compared to that of the preceding October.

SHIPMENTS—Mill shipments of finished portland cement increased 8 percent over those of the same month in 1950. Shipments were greater in 16 districts and lower in 3 districts, as compared to shipments in October, 1950. Percentage changes range from a 38 percent increase in the Virginia-Georgia-Florida-Louisiana-South Carolina district to 6 percent decreases in the Ohio, the Indiana-Kentucky-Wisconsin, and the Oregon-Washington districts. Marked percentage increases were also shown by Kansas, Iowa, and Puerto Rico.

STOCKS—Mill stocks of 6,944,000 barrels of finished portland cement were reported for October, 1951—17 percent greater than at the end of October, 1950. Clinker stocks totaling 3,542,000 barrels were 24 percent higher than at the same time last year.

2nd Edition of Source Book On Nonmetals Published

Just off the press is the second edition of *Nonmetallic Minerals*, a 605-page reference book authored by Raymond B. Ladoo, consulting engineer, and W. M. Myers, chief, Division of Mineral Economics, The Pennsylvania State College.

Mr. Ladoo states that because of the enormous strides made in this field during the last 26 years since the publication of the first edition, the work had to be largely rewritten, not merely revised. In addition, bibliographic reference material has been greatly expanded. The first edition of *Nonmetallic Minerals* was compiled by Mr. Ladoo; but, due to the complexity of the task encompassed in preparing the new edition, the present work was written in collaboration with Mr. Myers.

Beginning with *abrasives*, the authors call the roll, in alphabetical order, of all the known nonmetallic minerals, ending the list with *zirconium minerals*. Information on the various materials includes description, composition, physical properties, mining and treatment, production, utilization, consumption, prices (in some cases), varieties, geographical distribution, specifications and tests, marketing and shipping, etc.

Written in a style adapted to the novice and/or the specialist, this volume contains authentic data derived from government publications and other accredited sources. Charts, tables, and diagrams supplement the text in all sections of the book.

Published by McGraw-Hill Company, Inc. Price, $10 per copy.

Caterpillar Tractor Company Acquires Trackson Company

Acquisition of Trackson Company of Milwaukee, Wis., by Caterpillar Tractor Company, Peoria, Ill., has been announced by L. B. Neumiller, president of Caterpillar, and Walter H. Stiemke, Trackson president. Caterpillar has issued 54,000 shares of its common stock in exchange for all of the capital stock of Trackson.

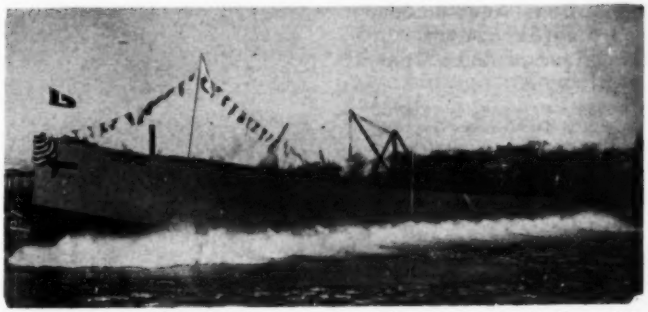
The Milwaukee concern will be operated as a wholly-owned subsidiary of Caterpillar, and will continue to manufacture its line of loaders and pipelayers as auxiliary equipment for Caterpillar diesel tractors.

Stockholders of Asbestos Corporation, Ltd., at a special meeting in Montreal approved a three-for-one split of capital stock. Authorized common stock will be increased to 3,600,000 no par shares, of which 1,800,000 shares will be outstanding. The company has no preferred stock or funded debt.

New Limestone Carrier Launched at Manitowoc Honors John G. Munson

November 28 marked another milestone in the 50-year progress of the United States Steel Corporation, as the *John G. Munson*, the largest self-unloading limestone carrier on the Great Lakes, was launched at Manitowoc, Wis. The 666-ft., coal-burning vessel, built by the Manitowoc Shipbuilding Company, was named in honor of Mr. Munson, the retired vice-president of raw materials for U. S. Steel.

The new freighter, capable of carrying a capacity of 20,000 gross tons of aggregates at a speed of 16 m.p.h., joins



• Launching of the self-unloading limestone carrier, "John G. Munson," at Manitowoc, Wis.

John G. Munson

the fleet of six self-unloading vessels operated by the Bradley Transportation Company, a U. S. Steel subsidiary. The Bradley vessel formerly bearing Mr. Munson's name has been rechristened the *Irvin L. Clymer*, in honor of the Bradley firm's president. Built at a cost of approximately $6,500,000, the large carrier will be put into operation following its trial run, scheduled for April of this year. The new ship, which is the largest ever launched at the 80-year-old yards of the Manitowoc Shipbuilding Company, will transport limestone from the world's largest crushed stone plant, that of another U. S. Steel subsidiary, the Michigan Limestone & Chemical Company at Calcite, Mich., to lower Great Lakes ports for use by steel mills and chemical plants.

Approximately 10,000 persons lined the banks of the Manitowoc River to witness the launching ceremonies of the vessel honoring a man who had been intimately associated with Great Lakes shipping for more than 30 years.

A special train carrying press representatives, including a member of PIT AND QUARRY'S staff, and U. S. Steel executives left the North Western Station in Chicago at 8:15 a.m. on the day of the ceremony, and arrived in Manitowoc shortly before the launching, which was held at 12:30 p.m. The modern streamliner was fully equipped to provide a pleasant trip for its passengers.

Mr. Munson, who retired last January, served as president and director of both the Michigan Limestone and Chemical Company and the Bradley Transportation Company from 1928 to 1939.

The steamer Munson, which was side-launched, displaced an estimated 1,750,000 gal. of water, as it was released from the sliding ways. Sponsor of the new vessel was Mrs. John G. Munson. A self-unloader, the freighter has continuous belt conveyors beneath the cargo space. These conveyors extend the full length of the ship. As stone is released through openings in the bottom of the hold, the conveyors carry it to a bucket elevator in the bow, which hoists it to a continuous belt conveyor in a boom overhanging the deck. This pivoted boom can be swung through a wide arc, permitting the unloading of stone over a considerable area of dock space.

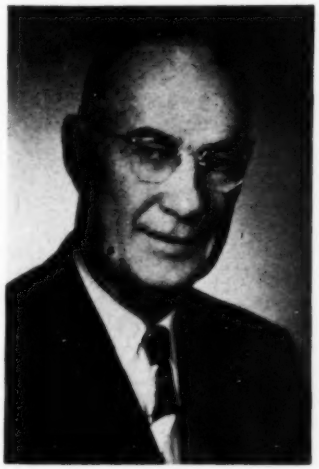
Baker Heads Natl. Gypsum Board—Sanderson, Manske Appointed to New Posts

National Gypsum Company directors have elected President Melvin H. Baker to the new position of chairman of the board and named Executive Vice-President Lewis R. Sanderson to succeed Mr. Baker as president.

Fred A. Manske, vice-president in charge of manufacturing, was appointed vice-president in charge of operations, and Production Manager Wells F. Anderson will succeed Mr. Manske.

The company said the changes were made to "broaden top management to better integrate present operations and develop further expansion potentials". Chairman Baker will handle the firm's policies on finances, capital disbursements, major personnel policies, and exploration of growth opportunities. Mr. Baker has been president since 1928.

President Sanderson will supervise day-to-day operations, sales, accounting, engineering, and research. He joined National Gypsum in 1936 and became a vice-president in 1947.



Lewis R. Sanderson

Fred A. Manske

Promotions Announced For Five Executives Of Universal Atlas Cement

Election of five executives to higher offices by directors of Universal Atlas Cement Company has been announced by Blaine S. Smith, president of this U. S. Steel subsidiary.

Effective December 1, George H. Reiter, vice-president and general sales manager, was elected to the newly-created office of executive vice-president; Fred T. Wiggins, vice-president and assistant general sales manager, became vice-president and general sales manager; Charles B. Baker, assistant to the president and secretary, is now vice-president and general attorney; from the post of assistant secretary Donald C. Leo was promoted to that of secretary; and Attorney Edward D. Depew became assistant secretary.

Mr. Reiter joined Universal Atlas at Chicago in 1912 as an engineer in the Cement Information and Inspection Bureau, leaving in 1915 to become manager of the Illinois Paving Brick Manufacturers' Association. In 1920, he became secretary and then president of the Springfield (Ill.) Paving Brick Company. After 8 years in this capacity and a short period as secretary and treasurer of the Poston Springfield (Ill.) Brick Company, Mr. Reiter was appointed manager of The Cement Institute in Chicago in 1930. A year later, he joined the Missouri Portland Cement Company, St. Louis, as sales manager. From 1933 to 1937 he was manager of the Chicago Division and secretary and general manager of The Cement Institute.

Mr. Reiter returned to Universal Atlas Cement Company at Chicago in 1937 as assistant to the vice-president, and in July of the same year was elected vice-president and general sales manager. He was elected a director in 1941.

George H. Reiter

Fred T. Wiggins

Mr. Wiggins has been associated with Universal Atlas for 25 years. He joined the company in 1926 at Birmingham and served in various capacities in the sales department until 1934, when he was appointed sales manager of the Birmingham territory. In 1944, he became assistant to the vice-president in charge of general sales in New York and two years later he was elected vice-president in charge of sales, Western Region. He was elected vice-president and assistant general sales manager in 1949.

Mr. Baker became secretary and general attorney for Universal Atlas in 1943, a year after joining the company. He was elected a director in 1944 and in 1949 was appointed assistant to the president. Educated at Dartmouth and the University of Chicago, he was admitted to practice in Illinois in 1938 and was associated with the division counsel for the United States Steel Company in Chicago for four years. In 1949 he was admitted to the New York Bar.

Following several years of association in legal capacities with New York firms and in the administration of his own law office, Mr. Leo started with the cement company as an attorney in 1943 and was made assistant secretary in 1947. A graduate of Fordham Law School in 1936, Mr. Leo was admitted to the New York bar the following year.

Mr. Depew joined Universal Atlas in January, 1947 as an attorney specializing in labor matters. Previously he had been employed by Western Electric Company in industrial relations work. He received his degree from New York University School of Law in 1942, and was admitted to the New York bar in 1946.

Donald C. Leo

Edward D. Depew

Charles B. Baker

Dodge Predicts Decline In 1952 Construction For Central, Eastern U. S.

Construction's dollar volume in the 37 states east of the Rockies is likely to run 10 per cent less in 1952 than in 1951, according to the F. W. Dodge Corporation. A study prepared by Dodge cites population growth and other expansion factors which cause potential construction demand to accumulate during the current period of metal shortage.

"It seems obvious that the fourth-quarter dip in contract volume will carry over into 1952; it might even continue through the middle of the year," F. W. Dodge officials stated. If the anticipated improvement in the metals situation and consequent easing of controls take place, there should be a definite uptrend of contract volume in the second half of 1952.

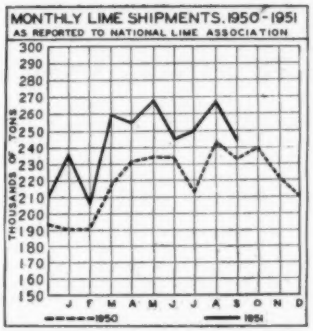
Residential building will decline more than any other classification, according to the Dodge outlook, while public works and utilities will decline least. Expected dollar-volume declines percentage-wise are: nonresidential, 6; residential, 16; and public and private works and utilities, 4; to make an over-all decrease of 10 percent. All classifications show expected declines, except privately owned utilities, marked for a 31 percent gain.

While the number of new dwelling unit starts is anticipated to decline 19 percent from 1951, based on the figures of the Bureau of Labor Statistics of the Department of Commerce, it is the opinion of the Dodge estimators that next year's total will be 850,000, which until recently was rated as very high volume.

Smaller average sizes for 1952 houses, accompanied by a moderate rise in building costs are anticipated. Adequate mortagage money is expected in 1952. This expectation accords with the opinions of the majority of the 128 economists. These estimates are believed to be conservative, as actual construction volumes in 1952 are, perhaps, a little more likely to exceed the indicated figures than to fall short of them, the Dodge report concludes.

The Winslow Engineering Company, 4069 Hollis Street, Oakland 8, Calif., manufacturers of filters and elements, has issued a warranty covering replacements of their products due to defects in material or workmanship. The warranty also covers engines or other equipment that is damaged as a result of defective filtering products. This is said to be one of the strongest warranties ever made on equipment as the manufacturer not only guarantees his own products but includes damage to other equipment that may result from defective products.

Cement users of Queensland, Australia, are buying thousands of bags of the stuff from Japanese plants at nearly four times the price of local product. Reports from Brisbane indicate that there is not enough local cement to go around.



According to data collected by the National Lime Association, 45 companies in September, 1951, shipped 243,645 tons of lime (160,040 quicklime; 83,605 hydrate). Reporting companies represent 59.3 percent of the association members' total capacity of record. Based on Pit and Quarry's estimate for the remainder of the industry, the total shipments were approximately 452,000 tons. Shipments by uses and grades for September, 1951, were:

	Quicklime	Hydrate
Agricultural	5,362	11,641
Building	13,933	43,769
Chemical	140,745	28,195
Totals	160,040	83,605

Carlsbad Potash Operations Of 3 Concerns Progressing

The current boom in the potash industry in the Carlsbad, N. M., area is still going strong. Duval Sulphur & Potash Company plans to attain full-scale production soon at its new mine.

Meanwhile, the Southwest Potash Company is completing surface installations, and production is scheduled to begin about July, 1952. At the International Minerals & Chemical Corporation operation the connection between the new No. 3 shaft and No. 1 has been nearly completed.

Cover Picture....

• Each of the limestone and iron ore carriers in this photograph, shown unloading their cargoes at Gary, Ind., is a city block long. In the far background is the "August Ziesing" and in the middle distance the "R. V. Lindabury." The "Carl D. Bradley," a self-unloader, is in the foreground. These and other United States Steel Corporation vessels carry approximately 8,000,000 tons of limestone and ore annually to the firm's Gary works.

Output and Value Totals Of Crushed, Broken Stone Show Increase Over 1949

Crushed and broken stone production, as reported by producers to the U.S. Bureau of Mines, showed a substantial increase in the United States in 1950 over the 1949 output, being 250,253,850 short tons, valued at $332,117,914, an increase of 13 percent in tonnage and 15 percent in value. Included in this total are stone sold or used for concrete aggregates, railroad ballast; metallurgical use (flux); agricultural limestone; refractory stone; riprap; in alkali, calcium carbide, sugar, and glass factories; in paper mills; and in various other chemical and manufacturing processes. Stone used in the manufacture of open-market lime and cement, asphaltic stone, and slate used for granules and flour are not included in this total.

The use of crushed and broken stone for concrete aggregate and railroad ballast (66 percent of the total output in 1950) increased 17 percent in quantity and 21 percent in value over the 1949 totals. Commercial operators produced 89 percent of the 147,107,670 short tons used for concrete aggregate, and government agencies 11 percent.

Metallurgical uses, which took 14 percent of the total crushed and broken stone in 1950 showed increases in 17 percent in quantity and 18 percent in value, as compared with 1949. Limestone for agricultural purposes (8 percent of the total tonnage of crushed stone in 1950), decreased 10 and 9 percent, respectively, in quantity and value. Other uses consumed 29,213,500 tons (12 percent of total), valued at $53,979,034.

In 1950 limestone, including dolomite, constituted 72 percent of all crushed and broken stone (excluding that used for making cement and lime) and was quarried in all but three states.

National Gypsum Receives Excellent Management Award

The National Gypsum company, Buffalo, N. Y., has been awarded a certificate of management excellence by the American Institute of Management, covering the year 1951.

National Gypsum is one of 298 firms to receive this recognition, based on a yearly appraisal of over 3,000 concerns. Production efficiency, sales vigor, executive evaluation, corporate structure, growth of earnings, research and development, and fairness to stockholders were among the factors considered in making the awards.

Business is booming at the world's only curling stone plants, located in Mossend and Mauchline, Scotland. Working at top speed, the two plants cannot keep up with the demand for the stones, most of which go to Canada. Curling is becoming increasingly more popular, and Americans are also taking up the sport. About 3,000 of the 40-lb. stones are exported annually from Scotland.

N.S.G.A. Honors Go to Plants In Tennessee, California, Texas

The Memphis plant of the Marquette Cement Manufacturing Company, the Irwindale Plant No. 6 of the Consolidated Rock Products Company, and the Kingsbury plant of the Fort Worth Sand and Gravel Company, Inc., won highest safety honors in their respective groups of the National Sand and Gravel Association's Safety Competition conducted by the U. S. Bureau of Mines. N.S.G.A. awarded a Certificate of Achievement in Safety to each winning plant and also awarded a Certificate of Accomplishment in Safety to each production employee at these plants for his part in the attainment of the outstanding safety record. In addition to the trophy-winning operations, the association awarded Certificates of Achievement in Safety to enrolled sand and gravel plants which had no disabling injuries and were worked 20,000 or more man-hours through 1950. This contest accepted only members of the National Sand and Gravel Association. The three operations cited will receive trophies provided by *Rock Products*.

The best safety record in the plant group working more than 100,000 man-hours was compiled by the Memphis plant of the Marquette Cement Manufacturing Company, at Memphis, Tenn. This dredge was worked 131,699 man-hours without any disabling injuries through 1950. The plant has been enrolled in 12 of 22 years that this competition has been conducted. During this time the operation also won trophies in 1947, 1945, 1940, and 1937 and was awarded Certificates in 1944 and 1938 for injury-free years. The men and officials of this plant achieved an outstanding record both in 1950 and in the past years.

The close contest for the trophy in this group is indicated by the record of the second ranking plant—the Eagle Lake dredge of the Texas Construction Material Company, at Eagle Lake, Tex. This operation was worked 129,880 man-hours without any lost-time injuries in 1950.

The Irwindale Plant No. 6 of the Consolidated Rock Products Company, at Irwindale, California, won top safety honors in the next group, plants working 50,001 to 100,000 man-hours. The winning record for this dry-pit was an operating time of 99,616 man-hours with no disabling injuries in 1950. The plant has been enrolled each year of the contest beginning with 1936. In 1938, it was awarded a Certificate for injury-free operation, its only other award until the trophy-winning record in 1950. From its continuous record in the contest, it is evident that the men of this plant worked long and hard to achieve their perfect safety performance in 1950.

Top safety honors in the group of plants working 50,000 or less man-hours were won by the Kingsbury plant, a wet-pit operation of the Fort Worth Sand and Gravel Company, Inc., at Euless, Tex. The men of this plant worked an aggregate of 49,085 man-hours in 1950 and had no lost-time injuries. This trophy-winning record was achieved in the first year that the operation was enrolled in the contest.

All told, 42 sand and gravel plants in this group attained injury-free safety records in 1950. Of these in addition to the trophy-winning plant, 23 received Certificates of Achievement in Safety and 18 were not eligible for Certificates because they were operated less than 20,000 man-hours. The Kingsbury plant was ranked first in the group because it had the largest total of man-hours of exposure without any injuries.

Other injury-free operations were listed (with the exception of a few plants) in our report in the first industry-wide safety competition of the U. S. Bureau of Mines last month, page 64.

The aggregate safety record of all participating plants in 1950 was one of the best annual records in the history of the competition. The frequency rate of 25.445 injuries per 1,000,000 man-hours of worktime was better than in any other year, except 1944 and 1934, since the contest was started in 1929. The severity rate of 2.629 days of disability per 1,000 man-hours of exposure in 1950 was the fifth-best annual rate in the history of the competition. Both injury rates in 1950 were well below the 22-year average frequency and severity rates.

A record number of 112 sand and gravel plants were enrolled in the 1950 contest. During a total worktime of nearly 7,000,000 man-hours at the plants, there were 177 disabling injuries. Of these, one was a fatal injury, 5 were permanent total disabilities, and 171 were temporary total disabilities. The total time lost or charged from all injuries was 18,286 days of work. This represents an economic loss which may be gauged roughly to be equivalent to a sand and gravel plant with 75 employees working through the year.

There were 79 bank or pit and 33 dredge operations enrolled in the 1950 competition. The injury-frequency at dredge plants of 18.135 per 1,000,000 man-hours was well below that of 29.361 at banks or pits. However, the injury severity of 2.539 days lost per 1,000 man-hours at banks or pits was slightly more favorable than the corresponding rate of 2.796 at dredges.

Israel's Building Boom Calls for New Cement Plant

Because of the ever-increasing demands of Israel's building industry, plans are under way for a new cement plant with an annual production of 150,000 tons, to be built at a cost of $6,000,000. Half of this amount will be needed in foreign currency for equipment, and the remaining half is available in Israel for the buildings and for working capital. The Federation of Building Contractors Associations in Israel, which is prepared to invest the full amount of the Israel capital, is also ready to purchase the full production of the proposed plant.

Israel has at present only one cement plant, producing about 400,000 tons annually. Two other plants, with an aggregate annual capacity of 300,000 tons, are under construction, and are expected to be in operation in 1953.

• This year the National Foundation of Infantile Paralysis has enlarged its 1952 campaign to four weeks, from January 2 through January 31. A longer fund-raising period was necessitated because the March of Dimes has not kept pace with the march of polio. Last year's drive, it was seen last July, will not be sufficient to finance the Foundation's work, and it appears that the deficit for 1951 will amount to about $5,000,000. "This Fight Is Yours" is the Foundation's appeal to all Americans, a summons which we of Pit and Quarry consider of greatest urgency.

Cement Corp. of America To Change Plant Location

After a two-year fight to build a $6,000,000 cement plant in the Matilija area near Santa Paula, Calif., the Cement Corporation of America abandoned this location and announced that the facilities would be built "somewhere outside Ventura County".

Officials of the firm stated that the Matilija site would be abandoned for building purposes, although it is planned to establish a quarry there. Residents in the area had objected to the company's plan to erect a plant at Matilija, terming such an operation a nuisance.

Iowa Cement Plant Workers Vote to Remain Non-Union

Employees of the Northwestern states Portland Cement Company at Mason City, Ia., recently voted against a proposal of the A. F. L. United Cement, Lime and Gypsum Workers Union that it represent them as collective bargaining agent.

Northwestern States workers chose to continue as a non-union group. This is the only unorganized cement plant in Iowa.

Awards Announced for 1950 N.L.A. Safety Contest Winners

Twelve certificate awards to lime plants for injury-free operations during 1950 have been made in the National Lime Association Safety Competition, conducted by the U. S. Bureau of Mines. These plants are awarded Certificates of Honor by the National Lime Association for their outstanding safety records during the year. The award-winning operations in the four groups into which competing plants are classified are:

Quarries with calcining plants working 100,000 or more man-hours – Galloway plant, Galloway, Mo., operated by the Ash Grove Lime and Portland Cement Company for 241,384 man-hours without a disabling injury.

Quarries with calcining plants working less than 100,000 man-hours – Evans plant, Evans, Wash., operated by the United States Gypsum Company for 96,363 man-hours without a disabling injury.

Thomasville plant, Thomasville, Pa., operated by The J. E. Baker Company for 88,056 man-hours without a disabling injury.

Lee plant, Lee, Mass., operated by the Lee Lime Corporation for 83,090 man-hours without a disabling injury.

McCoy plant, Bridgeport, Pa., operated by the Warner Company for 74,715 man-hours without a disabling injury.

Pearisburg plant, Ripplemead, Va., operated by the Ripplemead Lime Company, Incorporated, for 34,688 man-hours without a disabling injury.

Frederick City plant, Frederick City, Mo., operated by the Shank and Etzler Lime Company for 6,336 man-hours without a disabling injury.

Underground mines with calcining plants – Kimballton plant, Kimballton, Va., operated by the National Gypsum Company for 324,032 man-hours without a disabling injury.

Kimballton plant, Kimballton, Va., operated by The Standard Lime and Stone Company for 245,210 man-hours without a disabling injury.

Calcining plants only – Ludington plant, Ludington, Mich., operated by The Dow Chemical Company, Ludington Division, for 77,248 man-hours without a disabling injury.

Houston plant, Houston, Tex., operated by Nyotex Chemicals, Incorporated, for 52,672 man-hours without a disabling injury.

Plymouth Meeting plant, Plymouth Meeting, Pa., operated by The Phillip Carey Manufacturing Company for 39,144 man-hours without a disabling injury.

At these twelve plants, the men worked an aggregate of 1,362,938 man-hours without any lost-time injuries. This was 15 percent of the total time worked at the 45 competing plants in 1950. It is a clear indication of what can be accomplished in accident-prevention work when employees and officials put their combined strong efforts into well-designed safety programs. It is notable that the two lime plants with the largest totals of man-hours without injuries in 1950 were operations which obtain stone from underground mines.

The injury experience of the 45 plants enrolled in the 1950 contest was not favorable when compared with that in 1949. The injury-severity rate of 3.566 days of disability per 1,000 man-hours was 79 percent above 1949. Also, the injury-frequency rate of 26,076 per 1,000,000 man-hours was 27 percent higher than in 1949. Although these data represented a marked recession from the 1949 experience, it is pointed out that the severity and frequency rates were lower than the corresponding 16-year average rates since the competition started in 1935.

A total of 9,242,194 man-hours were worked at the enrolled plants in 1950. During this work-time, there were 3 fatal, 7 permanent partial and 231 temporary total injuries; a total of 241 disabling injuries. The aggregate time lost or charged as result of these injuries was 32,960 days. This represents an economic loss roughly equivalent to the full operation through the year of a lime plant employing 130 men.

Burns, handling materials, falls of persons, machinery, and falls and slides of rock were the leading causes of injuries at the 45 competing plants in 1950. All told, these causes resulted in 63 percent of all injuries on which causes were stated.

The most severe injuries resulted from haulage and machinery accidents. Haulage accidents caused 16 disabling injuries, of which 2 were fatalities. All haulage injuries had an average severity of 797.7 days per injury and temporary total injuries from this cause had an average severity of 54.5 days. Machinery accidents caused 22 injuries, of which 1 was fatal, 6 were permanent partial, and 15 were temporary total disabilities. All permanent partial injuries in the 1950 competition were caused by machinery accidents. The machinery injuries had an average severity of 672.2 days; temporary total disabilities from this cause had an average of 27.2 days per injury. Injuries from flying objects and falls and slides of rock were the next most severe, respectively 47.4 and 40.1 days of disability per injury.

Smith Engineering Works Loses President C. F. Smith

Charles F. Smith, president of the Smith Engineering Works, Milwaukee, Wis., who was a prominent authority in the development and manufacture of machinery for mines, quarries, and gravel pits, died on December 10 at Pasadena, Calif., where he was spending his winter vacation.

Charles F. Smith

When Mr. Smith became the active head of the Smith Engineering Works more than 35 years ago, the firm owned a few patents and was building only a gyratory crusher and related equipment. From this modest beginning he built his company to its present impressive stature in the industry.

A few years after his graduation from the University of Wisconsin Mr. Smith became vice-president and sales manager of the T. L. Smith Company at Milwaukee. In 1915 he was named president of the Smith Engineering Works. He was also a vice-president of the Sterling Wheelbarrow Company of West Allis, Wis., at the time of his death. All three of these companies were founded by his father, Thomas L. Smith.

Two of Mr. Smith's sons, Gerald L. and Thomas S., are active members of the Smith Engineering Works organization.

October Award Totals Decline in East, Mid-West

According to the F. W. Dodge Corporation, the October contract award total of $1,051,419,000 was 3 percent lower than for September and 7 percent behind that of October, 1950, for the 37 states east of the Rockies.

In October, non-residential awards of $418,203,000 were 3 percent higher than in September, but 2 percent lower than in October of last year. Residential contracts at $496,247,000 were 3 percent above the September figure, but 6 percent less than for October, 1950. Public and private works and utilities at $136,969,000 were down 31 percent from September and 24 per cent lower than for October a year ago.

The old Granite Bluff quarry west of Woodruff, Kans., has been reopened by the Missouri Valley Construction Company. The rock will be crushed and used in the construction of US-183, which is being relocated north of Woodruff.

N.S.G.A.—N.R.M.C.A. Convention Program

Conrad Hilton Hotel, Chicago, Ill., Feb. 11-15

MONDAY, FEBRUARY 11

Proceedings will start Monday, February 11, with the annual meeting of the two boards of directors. The National Sand and Gravel Association board will meet that morning; the N.S.G.A. board and the National Ready Mixed Concrete Association board will hold a joint luncheon; and the N.R.M.C.A. board will meet in the afternoon. Primarily the business of the two boards will be to consider the financial reports of the respective associations and to adopt a budget for each. At the luncheon the boards will make a final decision on the place and date of the 1954 convention-exhibit.

TUESDAY, FEBRUARY 12

The two associations will open their conventions with a joint session on Tuesday, February 12. The two presidents will make their respective addresses. The next speaker will be John L. Haynes, director of the National Production Authority's Building Materials Division, who will talk about the prospective allocation of controlled materials for defense and non-defense construction in 1952. Mr. Haynes will be followed by two prominent national figures in the highway field, who will talk about the accumulated highway requirements of the United States.

On Tuesday afternoon, the N.R.M.C.A. will hold its session on merchandising with Robert C. Collins of Philadelphia as moderator. Mr. Collins will set the stage with a general review of the merchandising problems of the ready-mixed concrete industry as they were encountered in 1951. He will discuss relationships between the cement industry and the ready-mixed concrete industry, and will talk about the function of those relationships in the past and in the future. Mr. Collins will present a panel of four outstanding ready-mix producers who will deal with the following appropriate phases of the merchandising question: lightweight aggregates; the growing problem of weight restrictions; problems of overloading; use of admixtures—air-entrainment, and otherwise; controlling mixing and agitating time; the problem of additional mixing water at the job; methods of discharge which will avoid segregation; and advertising, both radio and newspaper.

WEDNESDAY, FEBRUARY 13

Wednesday morning will be devoted to a joint session of the two associations. Fred Bergraff of the Highway Research Board will talk about axle loads, and Stanton Walker will submit his annual report. G. Donald Kennedy of the Portland Cement Association will discuss concrete for highways, and K. B. Wood of Purdue University, Lafayette, Ind., will discuss concrete pavement life in relation to aggregates.

The two associations will have a joint luncheon on Wednesday. Clarence Manion, Dean of the Law School, University of Notre Dame, and author of *The Key to Peace*, will be the featured speaker. The N.S.G.A. will have a two-hour session beginning at 3 p.m. on Wednesday, with their tax counsel, John T. Sapienza, leading a discussion on percentage depletion.

THURSDAY, FEBRUARY 14

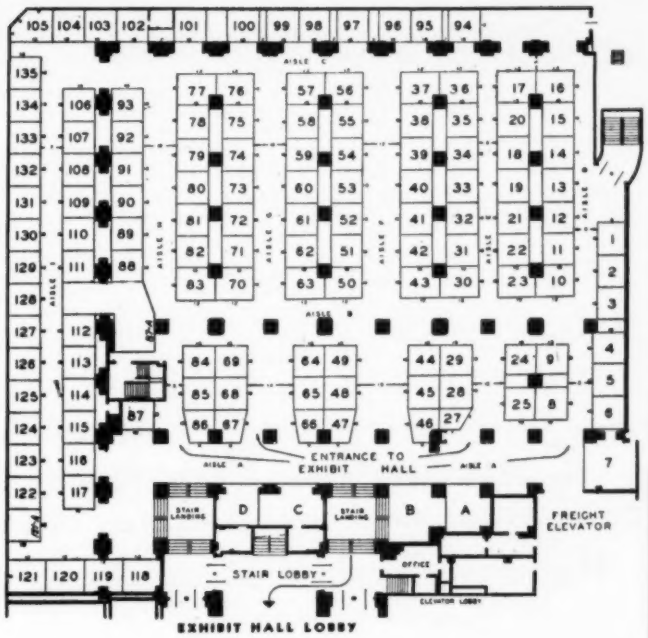
Again on Thursday morning the N.S.G.A. and the N.R.M.C.A. will get

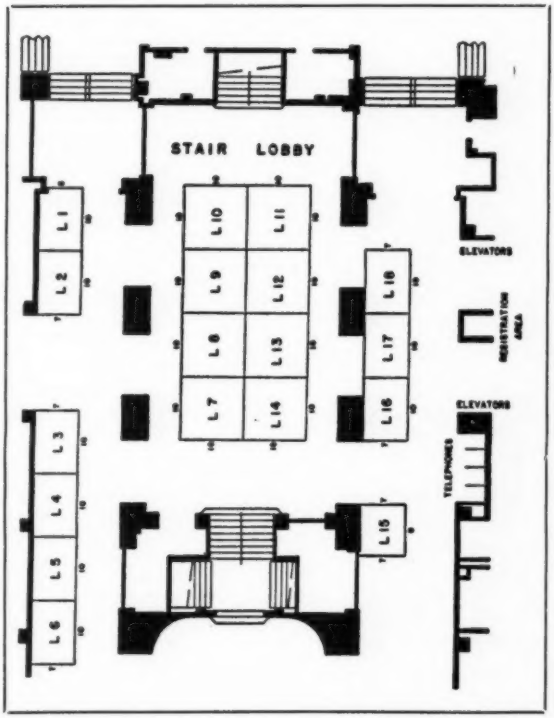
(*Continued on page* 88)

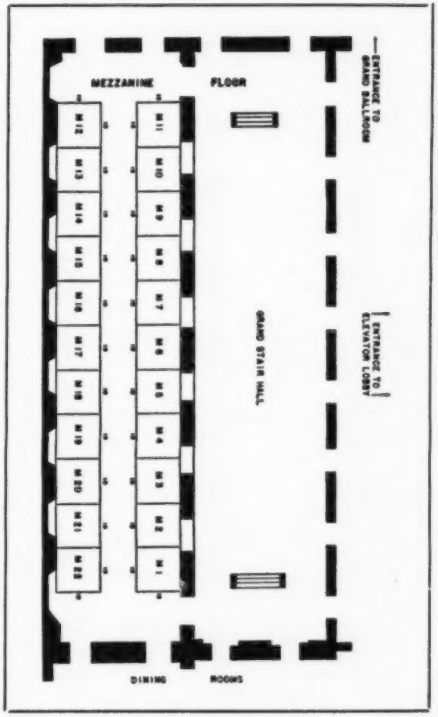
List of Exhibitors—N.S.G.A. and N.R.M.C.A.

COMPANY	BOOTH
Allis-Chalmers Manufacturing Co., Milwaukee, Wis.	77-78-79-80-81-82
American Manganese Steel Division, American Brake Shoe & Foundry Co., Chicago Heights, Ill.	55-56
Austin-Western Co., Aurora, Ill.	33-34
Autolene Lubricants Co., Denver, Colo.	L-16, L-17
Bacon-Pietsch Co., Inc., New York, N. Y.	87
Barber-Greene Co., Aurora, Ill.	38-39-40-41
Blaw-Knox Division, Blaw-Knox Co., Pittsburgh, Pa.	27-28-29-44-45-46
Bucyrus-Erie Co., South Milwaukee, Wis.	59-60
The Buda Co., Harvey, Ill.	17
Butler Bin Co., Waukesha, Wis.	102
Caterpillar Tractor Co., Peoria, Ill.	4-5-6
Chain Belt Co., Milwaukee, Wis.	67-68-69-84-85-86
Cleaver-Brooks Co., Milwaukee, Wis.	106-107-108
Concrete, Chicago, Ill.	M-19
Concrete Transport Mixer Co., St. Louis, Mo.	119-120-121
Construction Machinery Co., Waterloo, Iowa	116-117
Contractors and Engineers Monthly, New York, N. Y.	M-7
Cook Bros. Equipment Co., Los Angeles, Calif.	112-113
Cross Enginering Co., Carbondale, Pa.	C
Cummins Engine Co., Inc., Columbus, Ind.	103-104-105
Deister Machine Co., Fort Wayne, Ind.	53-54
The Delta Co., Chicago, Ill.	M-14
Dewey & Almy Chemical Co., Cambridge, Mass.	D
Diamond Iron Works, Inc., Minneapolis, Minn.	130
Dumpcrete Division, Maxon Construction Co., Inc., Dayton, O.	L-18
Eagle Iron Works, Des Moines, Ia.	98-99
The Euclid Road Machinery Co., Cleveland, O.	L-13, L-14
Flexible Steel Lacing Co., Chicago, Ill.	L-11, L-12
General Electric Co., Schenectady, N. Y.	88-89
Harnischfeger Corp., Milwaukee, Wis.	7
Harristeel Products Co., New York, N. Y.	37
The Heltzel Steel Form & Iron Co., Warren, O.	9 and 24
Hendrick Manufacturing Co., Carbondale, Pa.	109-110
Hercules Motors Corp., Canton, Ohio	127-128-129
Hewitt-Robins, Inc., Passaic, N. J.	72-73-74-75-76
The Frank G. Hough Co., Libertyville, Ill.	87A
Imperial Construction Equipment Co., Melrose Park, Ill.	L-10
International Harvester Co., Chicago, Ill.	114-115
Iowa Manufacturing Co., Cedar Rapids, Ia.	134-135
The Jaeger Machine Co., Columbus, O.	50-51-52-61-62-63
The C. S. Johnson Co., Champaign, Ill.	90-91
Kensington Steel Co., Chicago, Ill.	A
Koehring Co., Milwaukee, Wis.	92-93
Lima-Hamilton Division, Baldwin-Lima-Hamilton Corp., Lima, Ohio	35-36
Link-Belt Co., Chicago, Ill.	57-58
Link-Belt Speeder Corp., Cedar Rapids, Ia.	122-123
Littleford Bros., Inc., Cincinnati, O.	87B
The Ludlow-Saylor Wire Co., St. Louis, Mo.	100
McLanahan & Stone Corp., Hollidaysburg, Pa.	111
Mack Manufacturing Corp., New York, N. Y.	13-14
Marion Power Shovel Co., Marion, O.	131-132-133
Marquette Cement Manufacturing Co., Chicago, Ill	M-20
The Master Builders Co., Cleveland, O.	L-7, L-8, L-9
W. R. Meadows, Inc., Elgin, Ill.	L-2
Medusa Portland Cement Co., Cleveland, O.	M-8
Nordberg Manufacturing Co., Milwaukee, Wis.	30-31-32
Northwest Engineering Co., Chicago, Ill.	125-126
The Osgood Co., Marion, O.	118
Pettibone Mulliken Corp., Chicago, Ill.	83
Pioneer Engineering Works, Inc., Minneapolis, Minn.	B
Pit and Quarry, Chicago, Ill.	M-15
Rock Products, Chicago, Ill.	M-3
Sauerman Bros., Chicago, Ill.	94
Scientific Concrete Service Corp., Elizabeth, N. J.	1
Screen Equipment Co., Inc., Buffalo, N. Y.	2 and 3
Servicised Products Corp., Chicago	M-4

COMPANY	BOOTH
Sika Chemical Corp., Passaic, N. J.	M-22
Simplicity Enginering Co., Durand, Mich.	95-96-97
Smith Engineering Works, Milwaukee, Wis.	42-43
The T. L. Smith Co., Milwaukee, Wis.	47-48-49-64-65-66
Solvay Sales Division, Allied Chemical & Dye Corp., New York, N. Y.	L-4
Stedman Foundry and Machine Co., Inc., Aurora, Ind.	18-19
Stephens-Adamson Manufacturing Co., Aurora, Ill.	124
Sturtevant Mill Co., Boston, Mass.	M-18
SuPremix, Inc., Adrian, Mich.	M-5, M-6
Symons Clamp & Manufacturing Co., Chicago, Ill.	M-9
W. O. & M. W. Talcott, Inc., Providence, R. I.	20
Taylor-Wharton Iron and Steel Co., High Bridge, N. J.	101
Thew Shovel Co., Lorain, Ohio	70-71
The Transmission & Gear Co., Dearborn, Mich.	15-16
The W. S. Tyler Co., Cleveland, O.	8 and 25
Union Wire Rope Corp., Kansas City, Mo.	L-3
The White Motor Co., Cleveland, O.	47-48-49-64-65-66
Charles E. Wood Co., Milwaukee, Wis.	M-17
Worthington Pump and Machinery Corp., Dunellen, N. J.	10-11-12-21-22-23
Woven Wire Fabrics Division, John A. Roebling's Sons Co., Roebling, N. J.	121A







N.S.G.A.-N.R.M.C.A. Program

(*From page 86*)

together for a joint meeting. There will be an informal discussion of priorities and the allocation of materials by NPA, price control, and wage and salary control. The emphasis will be on audience participation. There will be a panel of four members with a moderator. The panel members will be Walter Acheson of the Office of Price Stabilization; George Roll of the Defense Materials Administration; Charles Horsky, association counsel; and Vincent P. Ahearn, executive secretary.

There will be a simultaneous N.S.G.A. session on operating problems on Thursday morning. The program is being arranged by the association's committee on operating problems, with J. L. Shiely Jr. as chairman. R. K. Humphries will discuss the Elliot plant of the Pacific Coast Aggregates Corporation. Other program material, dealing with fine aggregate production, is also being arranged for presentation at this session.

There will be a joint N.S.G.A. and N.R.M.C.A. session on Thursday afternoon. Vernon E. Lohr, chairman of the collective bargaining committee for the Southern California Rock Products Association and the Southern California Ready Mixed Concrete Association, will describe the procedures used by the two Southern California associations in collective bargaining negotiations with AFL unions, which led to the recent renewal of contracts with these unions. F. E. Schouweiler, president of the Old Fort Supply Company, Inc., Fort Wayne, Ind., will tell about the successful outcome of the firm's suit against the Common Laborers Union in Muncie, Ind., in which the organization recovered damages against the union for its effort to bar the company from delivering concrete. Mr. Horsky will talk about recent decisions of the National Labor Relations Board which affected the two industries, including group bargaining, secondary boycotts, the collection of union dues, and other cases which grew out of provisions of the Taft-Hartley Act. During this Thursday afternoon joint session, Mr. Ahearn will present his annual report.

FRIDAY, FEBRUARY 15

On Friday the two associations will hold separate concluding sessions. William Edward Hole, president of the American Aggregates Corporation, Greenville, O., will speak at the N.S.G.A. session on the growing problem of zoning restrictions and rehabilitation of worked-out sand and gravel properties. C. E. Proudlev of the North Carolina Highway Department will discuss the use of sand and gravel in bituminous mixtures. The trophies will be awarded to the N.S.G.A. safety contest winners at this gathering.

Convention Program

Conrad Hilton Hotel, Chicago, Ill., Feb. 17-20

National Crushed Stone Assn.

SUNDAY, FEBRUARY 17

9:00-5:30—Registration — Exposition Hall Foyer
10:00—Meeting of Manufacturers' Division Board of Directors—Private Dining Room No. 2
2:00—Meeting of N.C.S.A. Board of Directors—Private Dining Room No. 2

MONDAY, FEBRUARY 18

8:30-5:30—Registration — Exposition Hall Foyer

Morning Session
North Ballroom

J. Reid Callanan, president, National Crushed Stone Association, and president, Callanan Road Improvement Company, South Bethlehem, New York presiding

9:30—Motion picture
10:00—Greetings from the president—J. Reid Callanan
10:10—Announcement of Elections by Board of Directors
10:15—Report on business conditions during 1951 and the outlook for 1952—A summary of reports by regional vice-presidents presented by the President—J. Reid Callanan
10:30—Report of engineering director—A. T. Goldbeck
10:50—Report of Field Engineer—J. E. Gray
11:10—Report of Administrative Director—J. R. Boyd
11:30—Address of particular interest to salesmen—(Final arrangements not yet completed)
12:00—Adjournment

Greeting Luncheon
Boulevard Room
1:00

H. A. Clark, vice-president, Consumers Company, Chicago, Illinois presiding
Luncheon Address—Dr. William H. Alexander, Pastor, First Christian Church, Oklahoma City, Okla.
Inspection of Manufacturers' Division Exposition
Exposition Hall
2:30-6:00

Cocktail Party-Buffet Dinner
Grand Ballroom
6:30-8:30

TUESDAY, FEBRUARY 19

8:30-5:00—Registration — Exposition Hall Foyer

Morning Session
North Ballroom
Operating Men and Equipment Manufacturers

Dexter Bullard, vice-president in charge of operations, New York Trap Rock Corporation, Newburgh, N. Y. presiding

8:15—Motion Picture
8:30—Address—Drilling Practices—E. F. Haberkern, production manager, Columbia Quarry Company, St. Louis, Mo.
9:00—Question Period
9:30—Address—Primary Blasting Practices—T. C. Cooke, president, Lynn Sand and Stone Company, Swampscott, Mass.
10:00—Question Period
10:30—Address—Quarry Safety Practices—C. A. Gustafson, superintendent, Callanan Road Improvement Company, South Bethlehem, N. Y.
11:00—Question Period
11:30—General Discussion
12:00—Adjournment

Manufacturers' Division Lucheon
Boulevard Room
12:30

Annual Business Meeting
(For Members of the Manufacturers Division Only)

Afternoon Session
North Ballroom

2:30—Reports
Auditing Committee
Resolutions Committee
Percentage Depletion Committee—H. C. Krause, chairman
Group Insurance Committee—Warren C. Rowe, chairman
3:00—The New Jersey Turnpike Pavement-Design and Construction—Commander Charles M. Noble, chief engineer, New Jersey Turnpike Authority, Trenton, N. J.
3:30—Practical Application of a Percentage Depletion Allowance to Crushed Stone—James W. Haley, vice-president, Jewell Ridge Coal Corporation, Washington, D. C.
4:00—Discussion
4:30—Wage and Salary Controls—John C. Gall, Gall and Lane, Washington, D. C., General Counsel, National Crushed Stone Association
5:00—Discussion
5:30—Adjournment

WEDNESDAY, FEBRUARY 20

9:00-5:30—Registration — Exposition Hall Foyer
Inspection of Manufacturers' Division Exposition
Exposition Hall
9:00-12:00

General Luncheon
Boulevard Room
12:30

Address — Samuel Grafton, Distinguished News Analyst, New York, N. Y.
Presentation of N.C.S.A. Safety Contest Awards—C. A. Gustafson, chairman, N.C.S.A. Accident Prevention Committee

Afternoon Session
North Ballroom

3:00—The Outlook for MRO and Major Capital Additions for 1952—Harold A. Montag, Director, Mining Division, Defense Materials Procurement Administration, Washington, D. C.
3:30—Discussion
3:40—The Microscope and Aggregate Behavior—Robert H. Nesbitt, geologist, Office of the Chief of Engineers, Department of the Army, Washington, D. C.
4:10—Discussion
4:20—A "Tailored" Price Order for the Crushed Stone Industry — Walter H. Acheson, Chief, Building Materials Branch, Office of Price Stabilization, Washington, D. C.
4:50—Discussion
5:00—Adjournment

Reception
Normandie Lounge
6:00

Banquet
Grand Ballroom
7:00

Banquet Address—James D. Arrington, editor and publisher, Collins News-Commercial, Collins, Miss.

The N.S.G.A. will also hold their election of officers for 1952.

The N.R.M.C.A. session will be featured by the presentation of the trophies, donated by PIT AND QUARRY, to the winners of the association's annual safety contest. Ralph Anderson, president of the W. E. Anderson Sons Company, Columbus, O., whose firm won the Class A (plants producing more than 100,000 cu. yd.) contest, will tell how his concern became interested in safety and how it has paid off. A paper from the laboratory staff will be distributed. Election of officers for 1952 will be held.

REGISTRATION AND ENTERTAINMENT PLANS

The registration desk will be open at 2 p.m. on Friday, February 8, in the writing room on the mezzanine floor of the Conrad Hilton Hotel. The show is expected to be one of the finest in the history of the associations, and a record gathering is anticipated.

A brunch will be served the ladies at 11 a.m. on Tuesday. The entertainment at this affair will be furnished by the young lady who made such a hit at the 1950 convention with her interpretation of "South Pacific". This year she will tell the story and sing the songs of "The King and I". On Tuesday evening the associations will hold their annual manufacturer's reception, always a popular feature of the convention program.

Marquette Plans Improvement In Dust Collecting Facilities

Officials of the Marquette Cement Manufacturing Company have announced a plan for reducing the dust nuisance at the firm's Oglesby, Ill., plant.

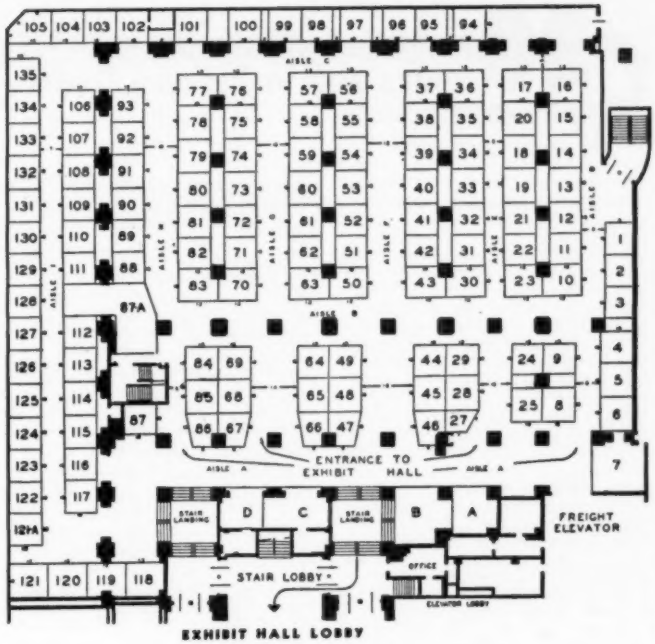
According to Frank Moyle, director in charge of operations, the existing installation, which has not proved satisfactory, will be altered and improved. Three drier stacks through which gases now pass into the atmosphere will be capped, and a horizontal flue will be substituted. Facilities installed in this flue will collect a large portion of the remaining dust particles.

Jefferson Lake Sulphur Splits Stock, Ups Dividend

Directors of the Jefferson Lake Sulphur Company recently voted to split its stock by increasing the authorized common shares to $1,000,000 and (if approved by stockholders) to issue one additional share to each holder of common stock.

The board also increased the quarterly dividend on the common with the declaration of 50 cents a share for payment December 21, 1951. In previous quarters shareholders received 35 cents per share. C. Wilbur Miller of Baltimore was elected chairman of the board.

The new address of the National Agricultural Limestone Institute (formed by a merger of the Agricultural Limestone Institute and the National Agricultural Limestone Association) will be 619 F Street, N.W., Washington, D. C.



List of Exhibitors—N.C.S.A.

COMPANY	BOOTH
Screen Equipment Co.	2-3
Caterpillar Tractor Co.	4-5-6
Harnischfeger Corp.	7
W. S. Tyler Co.	8-25
Euclid Road Machinery Co.	9-24
Olin Industries, Inc.	10-11
Buda Co.	17
Stedman Foundry & Machine Co., Inc.	18-19
W. O. & M. W. Talcott, Inc.	20
American Cyanamid Co.	21
Chain Belt Co.	22-23
Joy Manufacturing Co.	28-29
Nordberg Mfg. Co.	30-31-32
Austin-Western Co.	33-34
Baldwin-Lima-Hamilton Corp., Lima-Hamilton Division	35-36
HarriSteel Products Co.	37
Barber-Greene Co.	38-39-40-41
Smith Engineering Works	42-43
Hercules Powder Co.	44-45
Murphy Diesel Co.	48-49
Kennedy-Van Saun Mfg. and Eng. Corp.	50
Jeffrey Manufacturing Co.	51-52
Deister Machine Co.	53-54
American Manganese Steel Division, American Brake Shoe Co.	55-56
Link-Belt Co.	57-58
Bucyrus-Erie Co.	59-60
Traylor Engineering & Mfg. Co.	61-62
Northern Blower Co.	63
E. I. du Pont de Nemours & Co., Inc.	64-65
Easton Car and Construction Co.	68-69
Thew Shovel Co.	70-71

COMPANY	BOOTH
Hewitt-Robins Incorporated	72-73-74-75-76
Allis-Chalmers Mfg. Co.	77-78-79-80-81-82
Pettibone Mulliken Corp.	83
Atlas Powder Co.	84-85
Bacon-Pietsch Co., Inc.	87
General Electric Co.	88-89
Koehring Co.	90-91-92-93
Rock Products	94
Simplicity Engineering Co.	95-96-97
Ludlow-Saylor Wire Co.	100
Taylor-Wharton Iron & Steel Co.	101
Frog, Switch & Mfg. Co.	102
Cummins Engine Co., Inc.	103-104-105
Gulf Oil Corp., Gulf Refining Co.	106
Torrington Co., Bantam Bearings Division	107-108
Hendrick Mfg. Co.	109-110
McLanahan & Stone Corp.	111
Le Roi Co., Cleveland Rock Drill Division	125, 126, 127
International Harvester Co.	114-115
Johnson-March Corp.	116
White Motor Co.	117
Pit and Quarry Publications	98
Osgood Co.	122
Mack Manufacturing Corp.	13, 14
Northwest Engineering Co.	119, 120, 121
Stephens-Adamson Mfg. Co.	124
John A. Roebling's Sons Co., Woven Wire Fabrics Division	128
Sanderson-Cyclone Drill Co.	129
Diamond Iron Works, Inc.	130
Marion Power Shovel Co.	131-132-133
Iowa Manufacturing Co.	134-135
Kensington Steel Co.	A
Pioneer Engineering Works, Inc.	B
Cross Engineering Co.	C

30 years ago in Pit and Quarry

By Walter E. Trauffer

THE January 1922 issue of PIT AND QUARRY was full of information on the activities of the various industry associations, including reports on various state and national conventions. At the annual meeting of the Portland Cement Association at the Biltmore Hotel in New York City emphasis was on the importance of quality in the manufacture of cement. The association's constitution and by-laws were amended so as to make membership "contingent upon member's product meeting the Standard Specifications for Portland cement adopted by the United States Government and the American Society for Testing Materials". At this meeting L. T. Sunderland of the Ash Grove Portland Cement Co. was re-elected president of P.C.A. Also re-elected were: Richard Hardy, first vice president; S. B. Newberry, second vice president; F. W. Kelley, treasurer. Directors elected were: H. Struckman, Charles F. Conn, H. L. Block, W. M. Hatch, George T. Cameron, and David M. Kirk.

Another annual meeting reported was that of the Talc and Soapstone Producers' Assn. Officers elected were: President, Freeland Jewett, Eastern Talc Co.; vice president, W. E. Seybel, Uniform Fibrous Talc Co.; secretary-treasurer, Raymond B. Ladoo, U. S. Bureau of Mines.

The Wisconsin Mineral Aggregate Assn. elected J. K. Jensen of the Janesville Sand & Gravel Co. to the presidency. The Illinois Concrete Aggregate Assn., which met at the Sherman Hotel, Chicago, on December 13, 1921, elected as president Burton H. Atwood, Interstate Sand & Gravel Co., Chicago. The principal speaker was the late Frank T. Sheets, for many years president of the Portland Cement Assn., who was then Illinois Superintendent of Highways. The Missouri Valley Sand & Gravel Producers Assn. met on December 6 and 7 in Kansas City. John Prince, who had been president since the association was formed, retired and J. M. Chandler of Tulsa, Okla. was elected to take his place.

In this issue also was a preview of the National Crushed Stone Assn. convention to be held in the LaSalle Hotel, Chicago, January 16-18, in the same week as the American Road Builders' Assn. Convention and Road Show. The National Assn. of Sand and Gravel Producers' convention, scheduled for the Gruenewald Hotel, New Orleans on February 1-3, was accorded similar treatment.

Plant and operating articles were also featured, with five outstanding plants described and illustrated. Of particular interest was the new $450,000 plant of the Dixie Sand & Gravel Co. at Chattanooga, Tenn., a subsidiary then of the Dixie Portland Cement Co. which later became a part of the Penn-Dixie chain. The plant was designed by W. M. Klein, then general superintendent of the company's cement plant at Richard City, Tenn. and had a capacity of 250 t.p.h. Also described were the crushed stone plant of the La Crosse Crushed Stone Co. at La Crosse, Wisc.; the crushed stone plant of the Franklin Limestone Co. at Franklin, Tenn.; and the sand and gravel plant of the McGrath Sand & Gravel Co. at Pekin, Ill. An article on the new plant of the Logansport-Greenville Gravel Co. near Logansport, Ind. was written by its designer the late Frank M. Welch.

A staff-written article gave much sound advice on the advantages of large blast hole drills and the results of a time study. Another article by Oliver Bowles, then mineral technologist for the U. S. Bureau of Mines, warned of quarry accidents from falling rock.

Among the many important news items was the announcement that the Southwestern Portland Cement Co. would build a new cement plant at Waco, Texas. Another told of the incorporation of the Anna Stone Co., Anna, Ill. It was announced that the Monolith Portland Cement Co. had leased a new deposit near Monolith, Calif., and would add a fourth kiln to its plant there. The Aetna Portland Cement Co. was also reported to be planning to build a new 3-kiln plant near Bay City, Mich.

Whitehall Cement Mfg. Co. Sells Homes to Employees

The Whitehall Cement Manufacturing Company recently sold 38 company-owned homes in the Dewey Heights section of Cementon, Pa., to its employees. Sale prices ranged from $800 to $900, depending upon the size of the lot on which the house stood. In addition, the firm deeded the entire water system supplying the development to the Borough of Northampton Water Authority for a sale price of $500.

The homes are frame, with asbestos shingle exteriors. Up to the present, the company had rented them to employees only at $6.50 per month. Payment will be made by the purchasers over a three-year period, in a contract agreement between the company and the buyers. Whitehall is reserving its mining rights to the material under the properties.

Lily White Lime Company Purchased by Oklahoman

William S. Brantington of Ponca City, Okla., has purchased the Lily White Lime Company's plant and quarry near Rogers, Ark., according to an announcement made by Charles L. Key, former owner. The new owner announced that in the future the business will be operated as the Rogers Lime and Material Company.

Approximately $50,000 has been spent on the quarry and for the installation of machinery and equipment. A rock crusher with a capacity of 800 tons a day, and a 50-ton hammer mill have been installed. The new equipment will enable the company to produce agricultural lime, road stone, and chat at a planned rate of 40,000 to 50,000 tons a year.

Mr. Brantington has been engaged in the crushed stone business since 1903, and has operated his own quarries since 1915.

• A 20-ton Lorain-TL Moto-Crane, model MC-254, uses a 40-ft. boom and clamshell bucket to load sand at a pit near East Haven, Conn. It is owned by C. W. Blakeslee & Sons, Bridgeport, Conn.

Camp Concrete Rock Company Buys Tract in Ocala, Fla.

Purchase of the E. W. Clements property in Ocala, Fla., which has long been a landmark in the community was announced recently by the Camp Concrete Rock Company of that city. It was announced by Byron Craig, secretary-treasurer of the firm, that construction will be started as soon as the existing building has been razed and government regulations permit.

Camp Concrete Rock Company, which is affiliated with the Kibler-Camp Phosphate Enterprise, produces crushed stone. The firm is headed by Clarence Camp II, president. J. V. Simmons is general superintendent, vice-president, and purchasing agent.

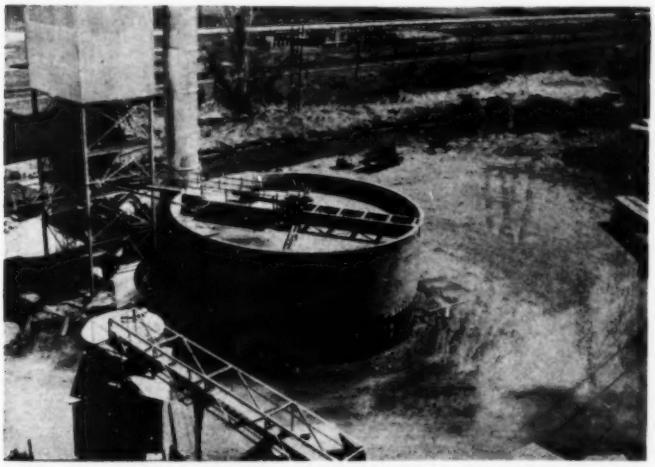
Construction Is Resumed On S. African Cement Plant

Reports from the Union of South Africa reveal that building was resumed on the cement plant at Port Shepstone, Natal, after a delay of three years caused by the cement shortage.

When completed, the facilities will have a capacity of 200,000 tons of cement per year. Large deposits of limestone, as well as ample supplies of dolomitic limestone, are said to have been found in this area.

Idaho Portland's Inkom Plant to Have 3,000-Bbl. Daily Output

By HARRY F. UTLEY



• Recent construction at Inkom shows the feed end of the new kiln, a part of the steel stack, the slurry basin, and the agitator rake. Bulk trucks load out the structure in the foreground. This view was taken from the top of the packhouse.

another ON THE SPOT report

WHEN additional grinding capacity is realized some time in 1952 to match increased burning capacity, the wet-process plant of the Idaho Portland Cement Company at Inkom will be capable of producing some 3,000 bbl. of cement per day.

An improvement program, in progress throughout the latter part of 1950 and 1951, has now virtually been completed under the supervision of the MacDonald Engineering Company and awaits only the installation of the new grinding mills before existing capacity of 1,300 bbl. daily can be upped about 130 percent.

Center of the expansion effort at Inkom has involved the addition of a new, high-mount 9- by 320-ft. F. L. Smidth all-welded rotary kiln, to supplement clinker production from the existing 10- by 200-ft. kiln, which has seen service since the plant first went into operation back in 1929. Other improvements have included the enlargement of the mill building, new slurry-storage tanks, a correction basin, three new finished-cement silos, and the necessary auxiliary equipment.

When the plant was built 22 years ago it was then, as it remains today, Idaho's only portland cement plant. Main offices are located in the Old National Bank Building in Spokane.

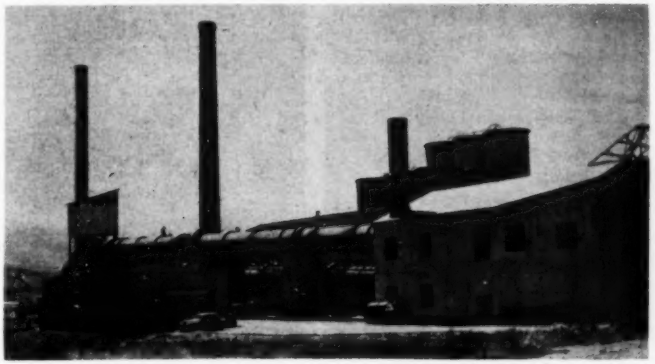
The quarry which supplies both the limestone and the shale is located on a steep hill behind the plant. The haul to the primary crusher is about 1,500 ft., and the rock was for years trammed by mine cars over a narrow-gauge railway. At present, however, a Koehring 5-cu. yd. Dumptor is loaded on the quarry floor by a Bucyrus-Erie 36B 1½-cu. yd. shovel, and the carrier transports the stone to a hopper directly ahead of the crusher. Some siliceous rock is used to balance the raw-material feed, and this is obtained at low cost as waste fines from the Morrison-Knudson ballast plant located a mile or so away. It is stockpiled conveniently close to the route taken by the Dumptor from quarry to crusher.

Reduction is accomplished by a Traylor 28- by 36-in. jaw-crusher, thence to a Gruendler 6XB hammerhill with a TyRock 4- by 8-ft. double-deck screen in closed circuit, the minus 1-in. stone passing to the storage bins. Raw material, gypsum, and clinker are stored conventionally, a Northern clamshell bridge crane handling the supply.

Raw grinding heretofore has been done by a single Allis-Chalmers 7- by 26-ft. Compeb mill in open circuit. A new Allis-Chalmers 7- by 28-ft., 2-compartment peripheral discharge mill is to be installed in parallel on the raw side, also in open circuit, to permit the grinding of sufficient slurry to operate both the old and new kilns at capacity. Product of each of the mills will be pumped to four steel storage tanks each of 825-bbl. capacity, a fifth tank being utilized for correction and mix control before the slurry is pumped to a 5,500-bbl.-capacity basin. Homogeneity is maintained by a Smidth rake-type agitator, and the feed to the kilns is by a Smidth spiral-scoop feeder synchronized with the kiln drive motor.

The new 320-ft. kiln is equipped

• Plant of the Idaho Portland Cement Company at Inkom, Idaho. The new kiln is in the foreground. The three tallest finished cement silos in the background are new.



• Right: This view within the plant shows the new (top) and old kilns, the slurry tanks, and the drag chains which convey clinker (foreground).

with a chain section and lined with Harbison-Walker refractory brick. The old 200-ft. kiln was converted to direct-coal firing in 1938, when a Raymound 2-roll bowl-mill was installed to supplant the old drying-grinding system. A new Raymond No. 473A 3-roll bowl-mill, complete with double air classification, has been erected to serve the new kiln. Utah and Colorado bituminous coals in the 12,500 to 13,000 B.t.u. range are used for firing.

A new Fuller No. 529 inclined-grate cooler handles the clinker output of the new kiln, a No. 522 unit having been installed on the old kiln a few years back. Smidth drag chains convey the clinker to storage.

The existing finish-grind mill is an Allis-Chalmers 7- by 30-ft. 2-compartment unit operating in open circuit. Delivery of an additional Allis-Chalmers 6- by 21-ft. Compeb mill is awaited to permit grinding the full clinker output of the two kilns. When this installation is completed, both the old 730 and the new 621 mills will grind in closed circuit with air separation.

Three new finished-cement silos were erected in 1951, bringing storage capacity in the total of 11 silos to 75,000 bbl.

Standard portland, and Type I and Type II low-alkali cements are produced, and the sacked output is packaged by two 3-spout St. Regis packers. Separate facilities have been installed for the efficient loading out of bulk cement by rail or by truck.

Every effort is being made to expedite delivery of the new raw and finished mills to permit full realization of the kiln potential as cement continues in critcally short supply throughout the Pacific Northwest. Expanded military, residential, and industrial construction, to say nothing of the huge requirements for atomic-energy installations and dam projects in Idaho and neighboring states, contributes heavily to the demand.

The Inkom plant employs about 60 workers, some of whom live nearby, others in Pocatello, 13 miles

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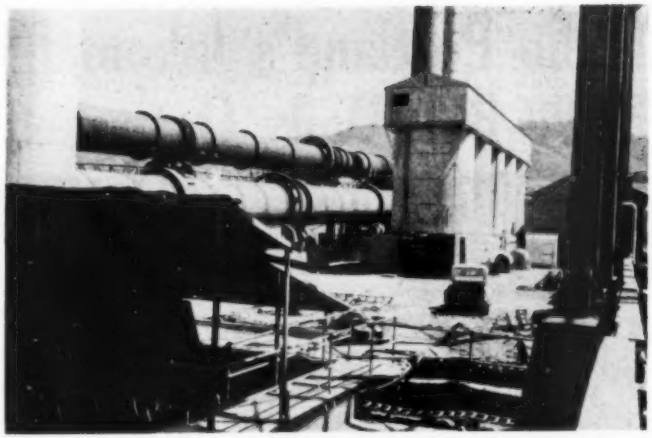
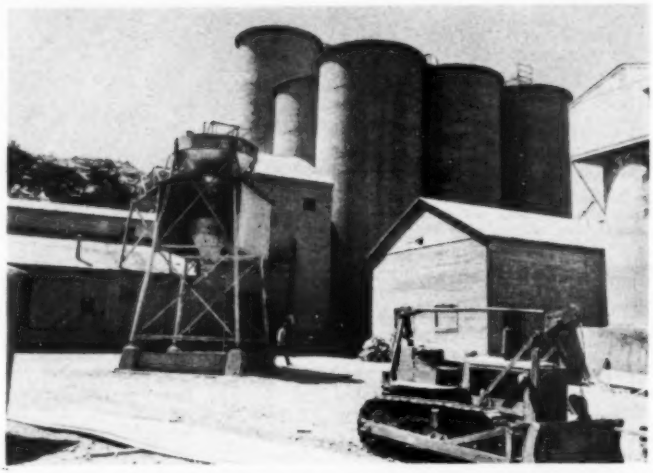
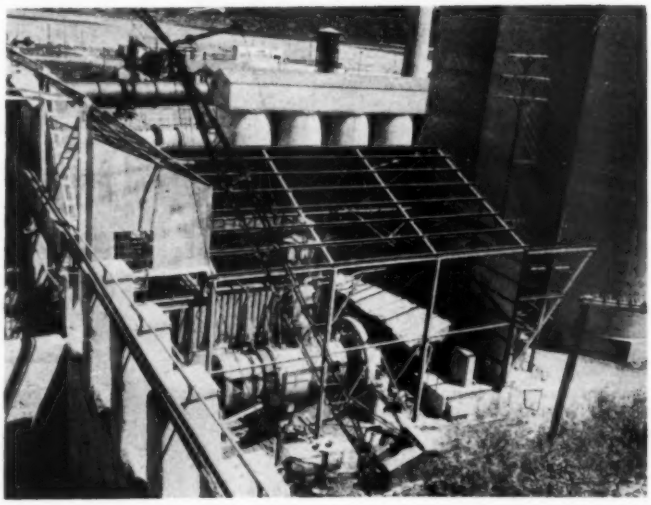


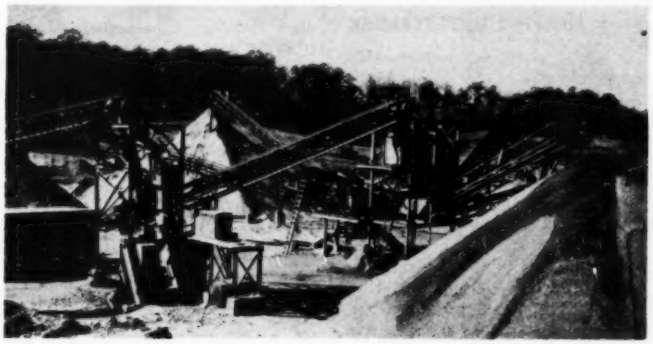




• Right, above: Looking toward the packhouse and the finished-cement storage silos. Bulk trucks are loaded and weighed out at the station (center).

• Right: Housing for the raw and finish mills under construction. Two existing ball mills (one shown) will be supplemented by two others now on order.

Waterbury Sand & Gravel Co. Successful Massimo Venture



• An overall view of the Waterbury Sand & Gravel Company's plant at Waterbury, Conn., showing one of the three diesel engines.

Of the many interesting and successful operations in the sand and gravel industry probably none has a more unusual background than the one operated by the Massimo brothers of Waterbury, Conn. The four brothers, led by Dominick Massimo, had previously entered the grocery business, the coal business, and the fuel oil distributing field, all with equally successful results. Confronted with a slack period in their coal and oil business, the Massimo brothers set out to invade another recognized field. The result was the formation of the Waterbury Sand and Gravel Company, with its plant located at Prospect, Conn., just outside Waterbury.

The plant provides a completely modern setup, which crushes the rock, screens it properly, washes it, and conveys it to stockpiles for delivery. The plant was set up on the 120-acre site which contains the deposit. The Eastern Engineering Sales Company of Boston, Mass., laid out the entire plant.

The material is trucked to the plant and discharged into a 13-ton steel loading hopper. The aggregate is then fed to the plant by means of an F-55 Syntron vibrating grizzly feeder, which has bars spaced 3 in. apart to allow minus 2½-in. material to be carried directly to the 24-in. EESCO feed conveyor. Oversize material passes over the grizzly and is fed to a 14- by 28-in. jaw crusher, which is powered by a 3-cylinder, 60 hp., model 49A4½, Fairbanks-Morse diesel engine. Following reduction, the material from the jaw crusher joins the minus 2½-in. aggregate on the feed conveyor.

Material on the 24-in. feed conveyor is carried directly to a 3- by 8-ft. Allis-Chalmers double-deck Ripl-flo vibrating scalping screen, with a 1¼-in. opening wire screen cloth. Oversize material from this screen is fed to an Allis-Chalmers No. 530 "Hydrocone" gyratory crusher powered by a 6-cylinder Model 49A4½ Fairbanks-Morse diesel unit. The engines on both the jaw and gyratory crushers were originally purchased oversize to accommodate larger machines and to increase the capacity of the plant in the future. After reduction by the gyratory crusher the aggregate is carried back to the No. 1 conveyor by means of an 18-in. EESCO conveyor for rescreening. All material passing through the 1¼-in. scalping screen is carried on a second 24-in. EESCO conveyor to the second or main screening tower.

Sizing of the material is done by an Allis-Chalmers 4- by 8-ft. triple-deck Ripl-flo vibrating screen located at the second tower. Coarse sand is fed to an EESCO double-screw sand washer, while fine sand is fed to an EESCO paddle-type unit. An additional Model 49A-½, 4-cylinder Fairbanks-Morse diesel power unit, rated 90 hp., has been installed to drive the existing water pump. This unit is used to supply all the water requirements for sand washing at the plant site.

The stone from the screen and the sand from the washers is fed to six stockpiling conveyors. The plus ¼-in. minus ½-in. material on one of the stockpiling conveyors is rescreened, separating the minus ⅜-in. material, which is stockpiled separately.

The productive capacity of the plant as originally set up is 150 t.p.h., although the company is in a position to increase this capacity at any time the plant operators feel the need. The sand and gravel meets the state requirements for road construction, building construction, and other needs. Electrical power to run the plant is supplied by a Fairbanks-

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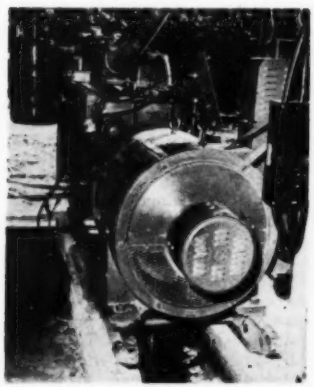

• End view of the 75-kw. diesel generating set, showing the intake filter and the a.-c. generator.

• Officers of the Waterbury Sand & Gravel Co.: Dominick Massimo, president; Louis Massimo, vice-president; Michael Massimo, treasurer; and John Massimo, secretary.

• Closeup of 3-cylinder diesel power unit, showing conveyor belt drive to primary crusher and chute.

WASHINGTON NEWS LETTER

1952

FOR most Americans the beginning of a new year is just another event in their lives. They may wonder whether it will bring peace or war, prosperity or depression. They may form a silent prayer of thanks that 1951 was not worse than it turned out to be, and a hope that 1952 will be better.

But in Washington, 1952 is a special year; it is a year when all Washington goes through the exquisite torture of a Presidential campaign. To be sure, Washington knew very little respite from politics during the years since the last election. But from now on the tempo increases. From now on every action, word, and gesture must be interpreted in terms of its political significance.

It is hard to imagine that Washington can become more hysterical than it is at the moment. The international situation refuses to become stabilized. The domestic situation boils over with increasing frequency. And to give the final fillip, there are the Congressional investigations.

But all those who live in and with Washington know that this is but the beginning, and that there will be no let-up until the first Tuesday after the first Monday in November.

1952 and Prosperity

There is no shortage of predictions that 1952 will be a year of great prosperity. That many of those predictions emanate from Washington bears testimony only to the historical fact that very few "prosperity Administrations" have been turned out of office. We are certain to hear much more of this in the months to come.

All of the predictions of prosperity in 1952 are based on a very simple set of statistics, the record of government spending. The happy predictions point to the following incontrovertible facts:

1. In 1950 the government spent $283,000,000,000 of which $13,000,000,000 were defense spending.

2. In 1951 the government spent $325,000,000,000 of which $32,000,000,000 were defense spending.

3. In 1952 the government will spend $344,000,000,000 of which $59,000,000,000 will be defense spending.

4. Conclusion—Prosperity.

By S. HERBERT UNTERBERGER

While it would be very comforting to subscribe to this simple analysis, some of the more analytical minds in Washington are concerned about its accuracy. They make several significant points, the most important of which is that, at best, these statistics point to prosperity only in some parts of the economy.

They point out that in 1950, less than 5 percent of the government's spending went to defense; in 1951 it was almost 10 percent; in 1952, it will be almost 17 percent. From these figures they draw the obvious conclusion that businessmen who sell defense goods to the government will certainly be prosperous, but this will, at least partially, be at the expense of other industries.

They also point out that prosperity generally means having things to sell and customers to sell them to. In 1952 many businesses, particularly those who rely on metals, are just not going to have very much to sell. Although in 1952 steel capacity will be 15 percent above the level at the outbreak of the Korean war and aluminum capacity will be double that of 1950, shortages in those metals are unlikely to disappear before 1953. Other metals, especially those for which it is necessary to rely on foreign supplies, will be short for a much longer period.

On the other hand, customers are acting very peculiarly. They seem to be refusing to buy not only goods which are in ample supply, such as clothing, but even those which may soon be hard to get, such as automobiles and other hard goods. Nor does this reluctance to buy result from the fact that they do not have the money. As a matter of fact, all the available data point to the conclusion that people are saving their money rather than spending it. People are saving almost as much of their income now as they did during World War II, when there really was nothing to spend it on. While they cannot explain why people are saving so much of their incomes, the predicters of prosperity confidently expect that the trend will soon be reversed and people will again begin to spend. They point out that the savings are primarily in the very liquid form of cash, bank deposits, savings bonds, and corporation securities. Should they be wrong, the current recession in consumers goods lines will continue.

Furthermore, whether 1952 will be a prosperous year depends on what we mean by prosperity. Even those businesses which are likely to make more money may actually be left with less after the year is over than they had in 1951 or 1950. The reason, of course, is that taxes have taken a further jump. Company after company has announced an increase in profits before taxes and a decrease in profits after taxes. Per dollar of sales, the net profit after taxes is down well below the pre-World War II level.

Finally, all of the predictions are subject to the biggest contingency of all and that is whether we have peace or war or something in between. This is a matter which no statistical analysis can determine. Nor is it a matter over which the United States has very much control. Relatively small changes on the international scene multiply into very substantial effects in our domestic economy. The best example is, of course, the gigantic repercussions domestically of the so-called "police action" in Korea.

Nevertheless, the political requirements of the Administration make it essential that they predict prosperity and insofar as it is within their power to accomplish it, they will try to produce prosperity.

1952 and Congressional Investigations

No bombshell has exploded in Washington with quite the "atomic" fury as has the one set off by the recent Congressional investigations into irregularities in the government's tax collection agencies. If there is one prediction that is likely to turn out to be accurate, it is the opinion that similar investigations will continue well into 1952.

Enemies of the Administration—and there appears to be no shortage of them—have found the Congressional investigation technique too successful to give up. The main question in Washington at the moment is which agency will be next. The principal contender for that dubious honor appears to be the Office of the Alien Property Custodian, in which the opportunity for

(*Continued on page* 101)

New G-300 WAGON DRILL

Especially designed to utilize to full advantage the high drilling speed and strong rotation of the CP 4-inch 70-N Drifter, the new G-300 Wagon drill has a number of *special* features.

- light-weight but rugged tubular chassis and drill carriage
- specially designed feed motor and cone-gear drive for greater load carrying capacity
- heavy-duty centralizer
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Permanente's Dust Nodulizing Process Effects Economies and Higher Output

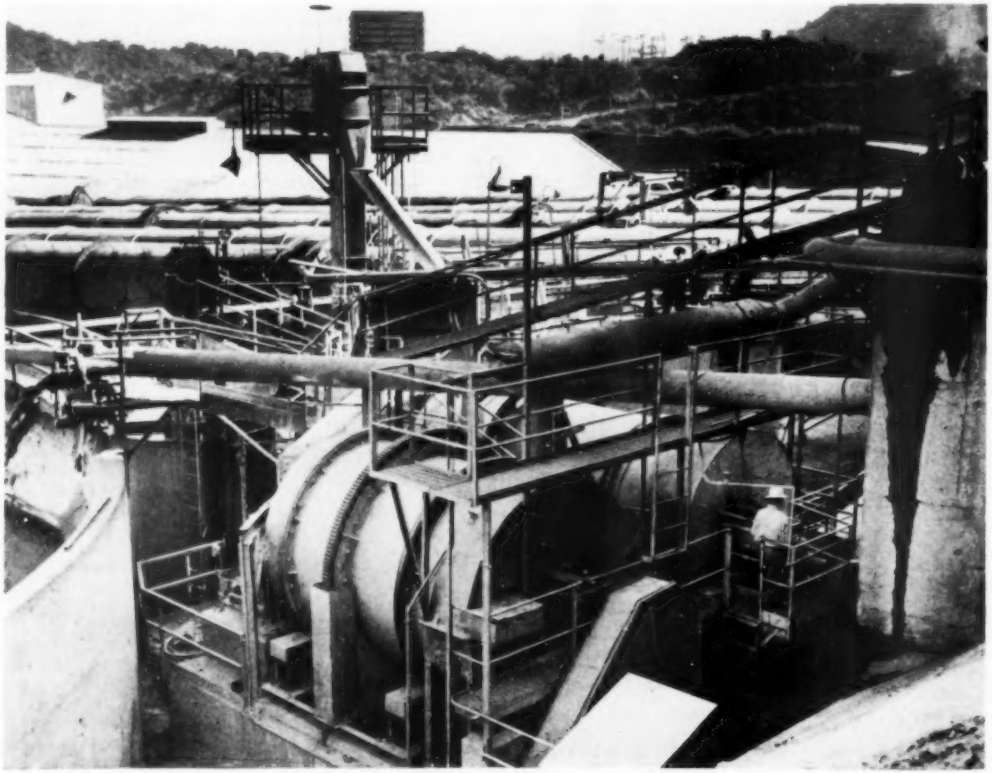
In the November 1951 issue of Pit and Quarry, p. 103, the latest improvements to the plant of the Permanente Cement Company at Permanente, Calif., were described. These not only greatly increased the efficiency in various departments but also raised the plant's capacity over the 7,000,000 bbl.-per-year mark, making it probably the largest plant in the world. The outstanding feature of this recent expansion program was the new kiln (the fifth), which has a feed consisting of about half dust collected from all five kilns. This method has eliminated the former dust handling and disposal problems and has simplified the operation of all five kilns, resulting in increased output and economy. This article describes in detail the manner in which this is done, the equipment used, and the benefits which have resulted.—The Editor

By P. S. HASS

Assistant Works Manager
Permanente Cement Company

The Problem In the earlier days of operation the kiln dust collected in the Cottrell precipitator at the Permanente cement plant was, as a matter of practice, pug-milled with the kiln feed slurry and re-introduced to each of the four kilns. The practice of the Permanente Cement Company was little different from the wet-process procedures generally used.

This method of dust disposal had many disadvantages, which were intensified over the years by: (1) increasing the output of the kilns beyond rated capacity and (2) changes in the chemical balance of the mix. The principal problems inherent in this method were: (1) reduction of kiln feed solids, to accommodate the pugged-in dust; (2) resultant increase in fuel consumption; (3) high circulating loads in the dust handling and collecting equipment, due to the easy re-entrainment of the returned dust; (4) irregular effect on clinker composition; and (5) non-uniform burning conditions due to varying dust loads, resulting in lost capacity and reduced brick life.



• A general view of the nodulizing area at the Permanente Cement Company's plant at Permanente, Calif., with kilns in the background. The two drums, the bucket elevator, and dust collection ducts are also shown.

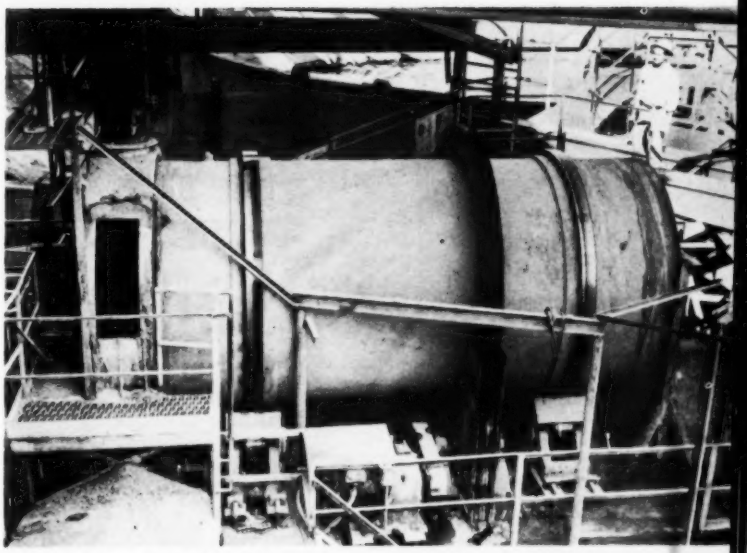
Development of the Process Based on a desire to handle the collected dust separately from the balance of the kiln operation, experimental work was initiated toward this end. The nodulizing properties of Cot-

trell dust were investigated thoroughly with and without clay additions to correct the dust chemically. Because of chemical differences between the dust and the mix from which it came—the dust contains more lime and less silica—it was known that dust could not be burned without excessive free lime and an "off-specification" clinker composition. Clay additions would be essential if the dust were to be concentrated in one burning operation. Typical analyses of the Permanente Cottrell dust and clay, on the ignited basis, are as follows:

	Dust	Clay
SiO_2	19.2%	35.3%
Fe_2O_3	2.1	25.8
Al_2O_3	2.9	29.5
CaO	70.9	6.3
Alkalis	2.5-3.0	...
Ignition Loss	18-19	7-9

One of the leading cement equipment manufacturers was approached with the request to provide equipment suitable for the following alternatives: (1) calcining of clay-corrected dust alone, either nodulized or as a dry mix; (2) calcining of nodulized dust and slurry together; or (3) introduction of nodulized dust into an existing kiln.

It was decided at Permanente to install a nodulizing drum and to introduce nodulized dust into one of the existing kilns by means of external feed scoops located just below the chain section. Our experiments had determined (1) that it was entirely practical to nodulize the dust with clay slurry in one step instead of premixing dry clay and dust and then nodulizing with water, and (2) that the nodules formed with clay slurry merely broke up into fractional pieces when introduced suddenly into high temperatures and did not pulverize or "explode" into dust of re-entrainment fineness.



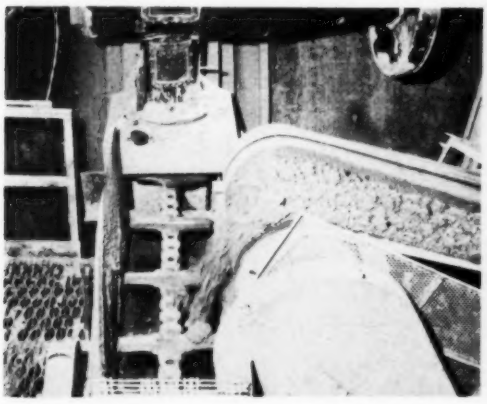
• Side view of the main nodulizing drum, with the discharge end on the left and the spare drum in the background. The man at the upper right shows the comparative size of the drums.

First Installation The installation as first conceived consisted of an 8½-ft. diameter by 11½-ft. long nodulizing drum of F. L. Smidth & Company manufacture, whose nodule product was carried by slow-speed belt conveyors to the feed scoops installed below the chain section of one of the four existing kilns. A dust surge tank was provided to receive collected dust and to feed the nodulizer via a half-pitch, vari-driven, close-tolerance, upsloping screw feeder designed to prevent flushing. A clay storage tank, air agitated, discharged diluted clay to a pump which sprayed the slurry onto the dust in the nodulizer under pressure through special-alloy nozzles. The kiln feed scoops were three in number and contained openings into the kiln measuring approximately 1 ft. 6 in. square at the smallest point.

This installation handled about half of the collected dust, putting it all in one kiln where the dust nodules comprised about 25 percent of the total feed for that kiln. The balance of the feed entered as slurry in the usual manner. The three remaining kilns continued to receive pug-milled dust, but in reduced

• Below, left: The belt conveyor discharging nodules to the short drag conveyor, which in turn discharges them into kiln feed-scoops.

• Below, right: A closeup of nodules discharging from the belt conveyor.



amounts in spite of an increase in kiln feed solids. The equipment was operated in this form for some time, with very real advantages in fuel consumption, production output, uniformity of operations, reduced dust losses from the kiln that received nodules, etc.

Much was learned and accomplished during this "breaking-in" period:

Chain sections of all kilns were shortened, to re-establish proper moisture content at the discharge ends of the chain systems.

The proper nodule moisture content was established.

The clay spray nozzles in the drum, which presented maintenance problems, were found to be unnecessary. The nodulizer was supplied with a separately-driven agitator shaft running longitudinally and equipped with beater rods for the first third of its length, rotating at higher r.p.m. in the opposite direction to the nodulizing drum. This agitator, originally supplied for controlling nodule size, proved to be an effective mixing device which obviated the need for an atomized clay spray for intimate mixing and easy chemical combination in the burning zone. A perforated pipe, gravity-fed and almost non-plugging, replaced the spray nozzles.

Better controls were found necessary for metering the dust and the clay slurry to the nodulizer, in order to avoid variations in the kiln load and to obtain nodules of uniform moisture content. It also became apparent that the nodule feed should preferably be synchronized with the kiln drive, in the manner of slurry feeders.

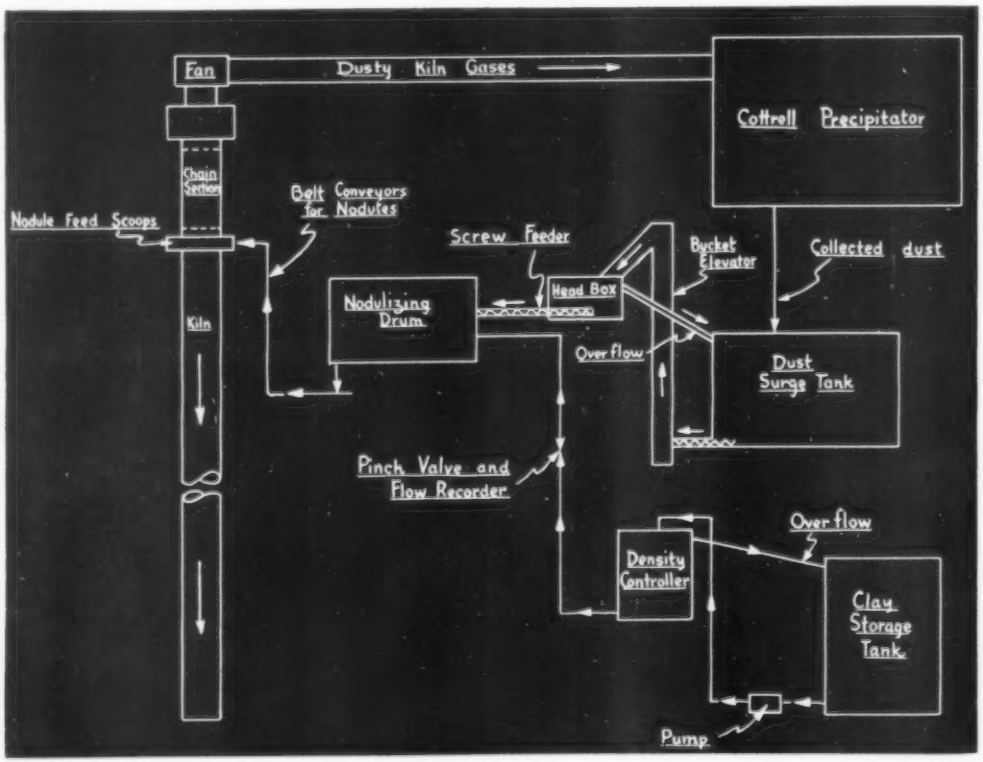
Description of Present Process Plans were eventually initiated for a 25 percent expansion of the plant productive capacity. The dust nodulizing process had already proven itself to the extent that the fifth kiln was designed to handle the entire five-kiln dust load as nodules. A second kiln of the original four is also to be equipped with nodule scoops, in order that two original kilns can handle the nodules when the new kiln is down, thus eliminating the entire pug mill setup.

The expanded facilities, including the enlarged dust nodulizing setup, have been in operation for a considerable period. The accompanying flow diagram and photographs may be helpful in illustrating the process.

The dust recovered by the enlarged Cottrell precipitator is stored in a hopper-bottom dust surge tank of 120 tons' capacity. The tank is equipped for air agitation through ceramic pads, and a screw conveyor in the hopper bottom carries dust to a conventional bucket elevator. The latter discharges into a dust constant-head box, with a continual overflow back to the dust tank. Two open-top screw conveyors lie in the bottom of this head-box to feed two nodulizing drums. Inside the head-box, and for some distance after their emergence, these screws are of half-pitch, tightly enclosed construction, to prevent flushing. The screw feeders are driven by A.C.A. variable-speed drives which are synchronized with the alternator on the kiln motor drive shaft. The slurry feeder is also synchronized with the alternator.

The nodulizing drums consists of (1) the original drum, 8½-ft. by 11½-ft., driven at 8 r.p.m. and equipped with agitator, scraper, and clay pipe as before; and (2) a new

(Continued on page 101)



• Flow sheet of nodulizing system at the Permanente, Calif., plant.

Unique Plant Design Results In Versatile Crushing Operation

another ON THE SPOT report

IN the versatile plant layout of The Union Building & Construction Corp., located at Clifton, N. J., production may be concentrated on road stone and salable clean sizes, or output may be regulated for quantity production of all sizes or fines to meet current demands. This feature has proved its great value in recent months as the construction of the New Jersey Turnpike progressed and tight work schedules demanded a constant flow of base material. Virtually the entire output of this plant went to the northern sections of the new turnpike during this period.

Due to the general topography of the surrounding area and the location of the quarry high in the crown of the deposits being worked, it was possible to locate the plant adjacent to and well below the present quarry floor. This arrangement made possible a unique inclined gravity-fed loading chute which provides a surge capacity ahead of the crushers of approximately 1,000 tons at all times and is regulated through control gates. The chute is of heavy timber construction, reinforced with steel I-beams, and its floor is lined with ⅜-in. steel plate.

The quarry has been in operation for the last 50 years. However, the present plant is a recent installation engineered, designed, and supplied by Bacon-Pietsch Company, Inc., New York, which also supplied the two primary crushers.

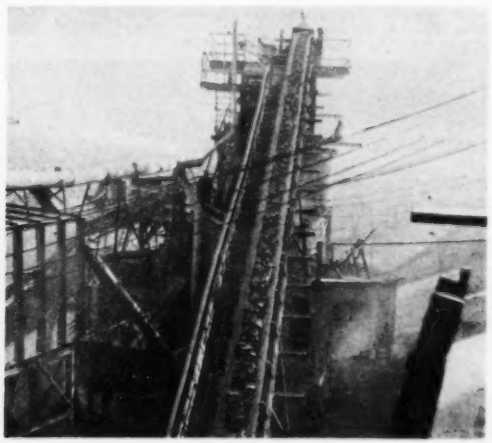
In normal operations all stripping of overburden for new work is done with an Allis-Chalmers HD 19 tractor with a Gar Wood cable 'dozer and a Lima crane equipped with a 2-cu. yd. dragline bucket. Primary drilling is handled by a Bucyrus-Erie 29 T electric blast-hole drill, with an average shooting schedule of once a week. Due to the close proximity of the Clifton residential area all blasting is done in the presence of the representative of the New Jersey Department of Labor & Industry, Albert E. Gamble, and V. F. Walters representating the explosives supplier, the Atlas Powder Company. Blasting foreman for Union B. & C. Corp. is August Stein; and Edward Amerspek is assistant.

Secondary fracturing is done almost exclusively with a Koehring Model 601 crane equipped with a 4-ton Cape Ann drop ball. This machine is kept in constant operation during the working period. Occasionally secondary shooting is necessary, and drilling is handled by an Ingersoll-Rand wagon drill powered with a Sullivan 365-c.f.m. diesel air compressor. This equipment is also used for toeholing when required. The quarry face runs from 60 to 125 ft. in height, with an average working height of 80 ft.

• Ronald Vander Kamp, plant foreman; John Ferrary, engineer; Edward R. Boate, vice-president, Bacon-Pietsch Company, Inc., New York; Nicholas Vander Kamp, superintendent; and William Jarvis Jr., weighmaster.

• Right: In this view are some of the connecting lines from the plant to the dust collector at the left.

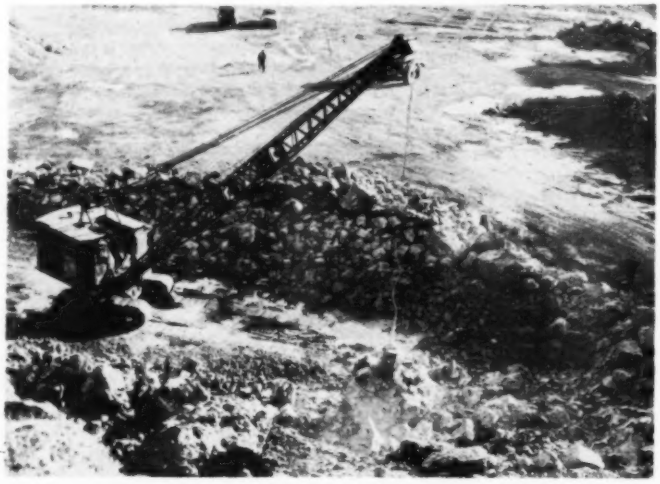
• Left: A view of a part of the plant, showing the seven 200-ton circular steel truck-loading bins.



Loading is done with a Lima Model 802 shovel of 2-cu. yd. capacity and powered by a Caterpillar diesel engine. Three Koehring Dumptors are used for the average 700-ft. haul to the hopper of the before-mentioned loading chute. These units carry a heaped load of 7 cu. yd.

The plant, with a rated capacity of approximately 300 t.p.h., consists of two primary jaw crushers worked in tandem, one a 36- by 24-in. Sterling steel rib frame and the other a 36- by 18-in. Farrel Type B. These discharge onto the No. 1, 30-in. conveyor to the primary scalping screen. It is at this point that production may be altered. If 1½- and 2½-in. stone is desired in quantity, these sizes may be sent directly to the screen loft. However, if fines production is desired, all material can be directed into one, two, or three Symons cone crushers as the production needs demand. In normal operation material would go to a 5- by 14-ft. Seco double-deck screen, with oversize stone going to a 4-ft. Symons cone crusher and onto conveyor No. 2 (30-in.) discharging onto a 5- by 16-ft. Seco triple-deck screen and a 4- by 14-ft. double-deck Seco, producing 1½- and 2½-in. stone. Oversize is returned to two 4-ft. Symons shorthead cone crushers, and this product is returned to conveyor No. 2 and sent to the screening loft, where the following sizes are produced: 2½-, 1½- and ¾-in. The

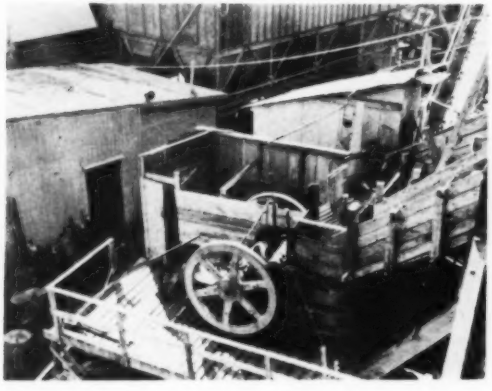
• The 2-cu. yd. diesel shovel loading one of the three 7-cu. yd. dump units used in the quarry.

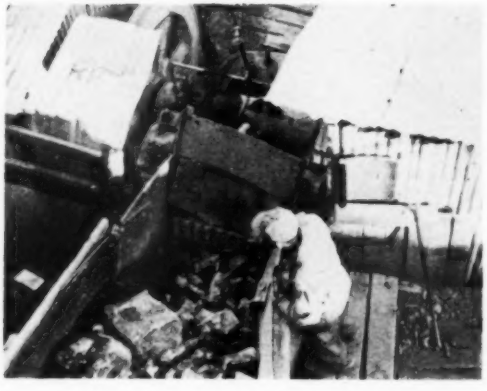


• Right: This crane, with a 4-ton drop ball, does most of the secondary reduction in the quarry.

• Below: The 36- by 24-in. steel rib frame jaw crusher which shares the primary crushing load with a smaller machine.

• Below right: The 36- by 18-in. jaw crusher which operates in conjunction with the machine shown at the left.





material which passes through this screen goes to screen No. 4, a 6- by 16-ft. triple-deck Robins unit, where the following products are made: ¾- and/or ⅝-, ⅜-, and ¼-in. and dust.

All material is stored in seven circular steel, self-cleaning bins having a capacity of approximately 200 tons each. The throughs of the primary scalper go into a 150-ton circular steel storage bin to be used as "B" product stone. The plant is equipped with a Parsons dust collection system having a capacity of approximately 35,000 c.f.m.

In addition to the storage bins, some materials are stockpiled; this material is worked by an Allis-Chalmer HD5G with a Tracto-Shovel, and an HD5. Loading from stockpiles is handled by four Haiss Model 80W loaders. Two 10-wheel Autocar trucks (diesels) are kept for stock work, and a fleet of about 30 of these units is used by Union Building & Construction Corporation in supplying its customers in the North Jersey area, as well as its own construction jobs. (This firm is also one of New Jersey's largest road contractors.)

• The electric blast-hole drill used for primary blasting.

Trucks are weighed on a Howe 50-ton scale equipped with a Weigh-o-graph and a 10- by 45-ft. concrete weighing platform. William Jarvis Jr. is weigh-master. The belting for this plant was supplied by the Manhattan Rubber Division, Passaic, N. J. The lubricants used came from the Gulf Oil Corporation. Artesian well water is used for the plant.

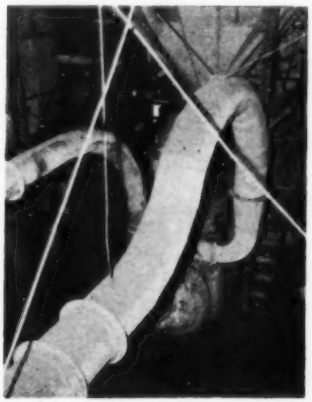
Generally a crew of 25 men is required for full operation under the supervision of Nicholas Vander Kamp, plant superintendent. Ronald Vander Kamp is plant foreman, and John Ferrary is plant engineer.

Company officers are Dow H. Drukker Jr., president; Richard Drukker, executive vice-president; S. Eugene Lindstamer, treasurer; and Henry R. Drukker, secretary.

Idaho Portland

(*From page* 92)

to the west. T. R. Enloe, president of the Idaho Portland Cement Co., makes his headquarters in Spokane, while E. A. Dufford, vice-president and sales manager, resides in Pocatello and has his offices at the plant in Inkom. W. R. Chandler



• This view of the new 3-roll coal drying and grinding mill is partially obscured by a pipe leading to the air classifier.

is superintendent, M. E. Olson is assistant superintendent, and C. R. Green is chief chemist.

Supervising the construction of the new facilities at Inkom was A. A. Senn, attached to the San Francisco branch office of the MacDonald Engineering Co.

Waterbury Sand & Gravel

(*From page* 93)

Morse 6-cylinder, Model 49A4-½, 75 kw. a.-c. generating set. The unit is housed in a small brick building located in the center of the pit.

Other engine equipment employed at the plant includes an oil bath air cleaner, a twin disc clutch, a radiator and centrifugal water pump, an exhaust muffler, an electric tachometer, a 24-volt electric starting motor and charging battery generator, a lubricating oil cooler, and an automatic shut-off control for low lube oil pressure and high water temperature.

Officers of the Waterbury Sand and Gravel Company are Dominick Massimo, president; Louis Massimo, vice-president; Michael Massimo, treasurer; and John Massimo, secretary.

Washington News Letter

(*From page* 94)

conferring special favors has long existed.

One of the most interesting aspects of these investigations is the reaction of most government employees. They read the newspapers and regard the findings as incredible. They just cannot believe what they read. Most long-service government employees will insist that not only have they never accepted favors from businessmen, but that they have never been tempted to because such favors have never been offered them.

Furthermore, they find it hard to believe that such highly-placed officials would have associated with the kind of characters whom they now publicly call their friends.

Above all, the bulk of government employees resent very strongly the reputation forced upon them by a few highly-placed officials with strong political connections but weak characters.

Nodulizing Process

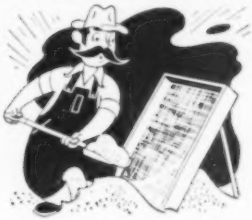
(*From page* 98)

better-proportioned, 8- by 17-ft. drum driven at 8.5 r.p.m. and equipped internally like the first drum. The smaller drum normally serves as a spare. Both drums thus operate at a peripheral speed of 213 f.p.m. and discharge their nodules onto a 48-in. belt conveyor traveling at 26 f.p.m. This belt transfers either to another 48-in. belt of similar speed which feeds the new kiln, or to a system of 36-in. belts to feed the scoop-equipped older kilns when the need arises.

The clay system consists of a 10-ft. diameter by 15-ft. high clay storage tank of approximately 7,000-gallon capacity equipped with constant air agitation. A rubber-lined pump services the special elevated tank containing a Foxboro density controller-recorder. This control tank, which continually overflows back to the storage tanks, delivers a slurry of pre-determined and constant percent solids to the lines feeding the nodulizing drums. These clay lines have manually-controlled valves to vary the volume, but contain flow-nozzles and flow recorders to provide a record of the gallons of slurry used.

(*Continued on page* 152)

Screenings



by William M. Avery

ELSEWHERE in this issue we have struggled with our year-end chore of reporting on the performance of the pit-and-quarry industries, throwing in for good measure a few completely reckless prognostications concerning 1952. It was our thought to bang out a few predictions of a more general nature for the amazement of the readers of this department, but our heart really isn't in it. If, for example, we were to reveal now the identity and party affiliation of the next President, a good many people might not even bother to go to the polls, and such abstentions might actually invalidate the whole basis for our prediction.

Since the same objection applies in varying degrees to almost any of the numerous issues which must be resolved in 1952, we have decided, not without some reluctance, to file our carefully-prepared revelations for future reference. If enough of our readers should demand it, we'll consider publishing our findings a year from now when they can no longer affect the course of history.

The Ties That Bind

ONE of the more recent additions to our staff, a reformed sports writer, has just erupted with predictions on the outcome of several (we hope) mythical bowl games.

Portland Cement Bowl: Ideal 26, Universal Atlas 26. Uniform high-early-strength of these two strong contenders will bind them in a deadlock.

Sand and Gravel Bowl: Pacific Coast Aggregates 0, Material Service 0. Stone wall defense will make scoring impossible for either team.

Lime Bowl: Ash Grove 73, Kelley Island 73. Each of these teams has plenty of what it takes to plaster the other.

Not For Bored Stiffs

A PROFESSOR of speech at the University of Oklahoma has invented a gadget which measures the boredom of an audience by converting yawns and wiggles into wavy lines on a chart. At first blush it occurred to us that the device might be used to good advantage at some of the convention sessions we attend, but there's one serious flaw. The inventor appears to have assumed that the audience would at least stay awake.

Intraplant Transport

A news clipping we've just received states that supervisory personnel at National Gypsum's new plant at Medicine Lodge, Kansas, have been provided with bicycles to facilitate their movements in the 836-ft. long building in which wallboard is manufactured. We just

want to advise the company that in case any of its Medicine Lodge supervisors can't ride a bicycle, we have several pairs of slightly rusty roller skates and a some what battered pogo stick kicking around our premises that we'll be glad to donate.

Ticklish Business

THAT Round Rock Competition up at Gig Harbor, Wash., has run its dreary course. The $100 prize want to a Tacoma man whose entry lacked only nine-one-hundredths of an inch of being perfectly round. Several of the more than 400 rocks entered in the contest were even closer to perfection, but the judges found evidence of mechanical chicanery.

So far as we can learn, the promoters of this wacky affair failed to carry out their announced intention of selecting a Miss Round Rock beauty queen. They probably found evidence of some form of mechanical chicanery in connection with *all* the curves submitted. Or maybe the contestants giggled too much while they were being calipered.

Biscrete

"GOOD Concrete," says a headline in the San Francisco *Chronicle*, "Is As Easy To Make As A Bride's Biscuits". That may well be, but there are several other points of resemblance which would have occurred to us first.

Dog Daze

ACCORDING to *Chemical & Engineering News*, a prospector in Grants, N.M., has trained his dog to assist him in finding uranium ore. As we understand it, the hound is sent prowling into the countryside with a piece of dentists' X-ray film taped to his nose.

If the film is fogged when the animal returns, it is assumed that he has sniffed a radioactive ore somewhere in his wanderings.

"Then all the prospector has to do," says the *News*, "is to find out where the dog has been. Sounds easy, doesn't it?"

To us, just off hand, it sounds practically impossible, but even assuming it could be done, it would still leave a hell of a lot of territory to be explored if this guy's dog is anything like ours.

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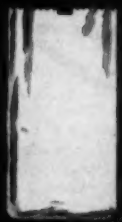

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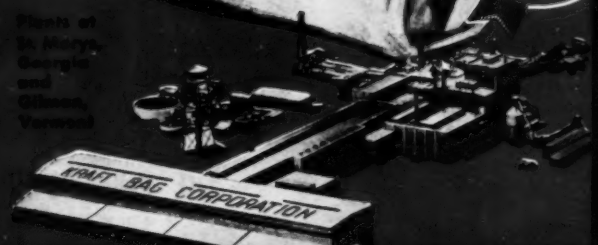

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2. ROCK-HANDLING COST

KING DETONITE breaks up rock into sizes that permit shovels to dig efficiently at all times, thus reducing handling costs to a minimum.

3. EQUIPMENT MAINTENANCE COST

KING DETONITE's proper fragmentation means less wear and tear on expensive equipment . . . less cost for maintenance and replacement.

4. PROCESSING COST

KING DETONITE's proper fragmentation allows your crushers to operate at top capacity, thus lowering cost of processing the stone.

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MAKERS OF QUALITY EXPLOSIVES SINCE 1878

Review and Forecast

A special section summarizing conditions in the Pit and Quarry industries

THIS January, 1952, issue is the 36th consecutive annual Review and Forecast Number to be published by PIT AND QUARRY. In it we again present reviews of the developments and conditions in the nonmetallic minerals industries during the last year and prospects for the year ahead. Because of the uncertain conditions confronting these industries and industry in general we have made an even greater effort than ever before to obtain the most complete information possible. We have assembled all the factual information available from government bureaus and other fact-finding bodies, from our own files, and other sources, and we have sent out many hundreds of questionnaires to producers in our industries in order to get an accurate cross-section of information and opinions from all parts of the country. Complete official reports on 1951 production, shipments, prices, etc., will not be available on any of these industries for several months but we believe that, with the cooperation of the industry and others, we have enough information to enable us to present a fairly accurate picture of conditions in 1951 and a reasonably good estimate of prospects for 1952.

REVIEW The nonmetallic minerals industries forming the PIT AND QUARRY field—and this includes all nonmetals except coal, oil, and building clays—collectively had the biggest year in their history in 1951, judging from the incomplete returns now available. This is a notable achievement in view of the fact that the products of many of these industries go primarily or to a large extent into construction, certain types of which were under restrictions the latter part of the year. However, other types of construction increased enough to compensate for these losses, with the result that 1951 was the second-biggest year in history in real construction volume, being slightly under 1950, which it exceeded in dollar volume for a new record. Industrial production was up about 7 percent over 1950, including such large users of nonmetallic minerals as the steel, chemical, and manufacturing industries. Also in 1951 there were fewer handicaps to production in these industries, strikes and shortages of fuel and cars being fewer and less serious than in 1950.

The portland cement industry in 1951 set new records for the fifth consecutive year in production, shipments, and value of shipments. The price per barrel increased slightly during the year but not as much as the cost of labor, materials, etc., going into its manufacture. Bureau of Mines reports are available for only the first 11 months of the year but these indicate an increase in production for the year of about 8 percent to approximately 245,000,000 bbl. Shipments were about 242,000,000 bbl., or 6 percent over 1950. The total mill value of production was up about 14 percent for a total of about $610,000,000.

As there are no official figures available on aggregates production for even a part of the year, our information on these industries is probably less accurate, being based almost entirely on questionnaires sent to hundreds of established producers in all parts of the country. There is no doubt, however, that collectively and individually these industries also set new records of production and value in 1951. The sand-and-gravel industry apparently produced about 392,000,000 tons, about 6 per cent over the 1950 all-time record. This includes both commercial and non-commercial production. The 1951 output of crushed stone (including both commercial and non-commercial production but excluding that used for cement and lime manufacture) was up about 13 percent for a total of about 283,000,000 tons. Price increases in 1951 were moderate but general.

Again little information is available on the production of other aggregates, including slag, chats, perlite, and other lightweight aggregates, but their output, both collective and individual, undoubtedly increased considerably. The record output of the steel industry made ample slag available for both heavy and lightweight aggregates. There was definitely a significant increase in the output of other lightweight aggregates, due in large part to the increased demand of the concrete masonry units industry.

There is a dearth of 1951 information on the other nonmetallic minerals industries in this field, nearly all of them industrial minerals, but all indications point to a general increase in production over 1950. Of the six industries on which partial 1951 information is available, all showed increases of from 2 to 20 percent. Lime production is estimated to have reached a new high of over 8,000,000 tons. Gypsum mine production greatly exceeded the 1950 record of 8,119,126 short tons, and phosphate rock also set a new record. Undoubtedly many of the other industries in this category also set new records and most of them exceeded their 1950 output.

FORECAST Just a year ago it was generally and, it is now apparent, erroneously believed that, because of the Korean situation, business would fall off somewhat in 1951. Now it seems that construction and material controls, and the still uncertain world situation may hold down the production of nonmetallic minerals in 1952, making it a good but not a record year. It would not be surprising, however, if any reduction in the use of materials going into construction was balanced by increased demands for minerals for defense production.—The Editors.

Construction Review and Forecast

1951 Dollar Volume Set Record

By E. E. GREEN

Industrial boom accounted for increase; costs, curbs, are factors in '52 activity.

THE construction industry experienced the largest dollar volume ever recorded in 1951! New construction of all kinds reached a total of $30,000,000,000, a figure 8 percent higher than the previous record of $27,902,000,000 reached in 1950. These figures, which are compiled by the Bureau of Labor Statistics, are for new construction only and do not take into account the amount of money spent for repairs, maintenance, and other improvements that do not fall into this classification. A conservative estimate would place this unrecorded construction at close to $8,000,000,000. Altogether the construction industry did a building business in 1951 totalling about $38,000,000,000.

Interstate bridge at Hudson, Wis., spans St. Croix River and joins Wisconsin and Minnesota.

Housing Home building provided the largest single market for construction materials and services during 1951, as it did in 1950. Non-farm residential building accounted for about one-third of the total construction value or $10,000,000,000, of which 90 percent constituted dwellings and 10 percent garages and other related construction. Farm construction, which includes farm dwellings and farm buildings of all kinds ran to $1,200,000,000. These two fields (non-farm and farm housing and related buildings) accounted for 36 percent of all construction expenditures during the year!

A year ago predictions were being made that housing construction volume would drop considerably during 1951. While a drop in physical volume of 400,000 dwelling units did occur, this was somewhat offset by increased costs, so that only a 14 percent decline in total housing expenditures occurred from 1950, which was the greatest year in housing volume and expenditures ever recorded. Altogether about 1,000,000 dwelling units were built in 1951.

The outlook for housing in 1952 is uncertain. Government controls aimed at reducing home building through control of critical materials and through tightening of credit restrictions are apparently becoming more effective, and costs of construction have risen to the highest level in history. It has also become more difficult for the prospective home builder to obtain the needed financing and to locate some of the necessary materials to build a house.

While a decline of 14 percent in dollar value for 1951 housing does not seem large when compared with the record year of 1950, it should be noted that much of the drop occurred during the latter part of the year. Expenditures for housing in November, 1951, were 19 percent less than in November, 1950; October and September totals this year were 45 and 33 percent lower, respectively, than the totals of last year's corresponding months.

One source predicts a 16 percent decline in housing expenditures this year, as compared with 1951. It is expected that the first part of the year will be slow, with a slackening of material controls and an easing of the mortgage market giving impetus to the home building field about the middle of the year.

Another authority feels that the dollar volume of home building will stay at about the same level as in 1951, and that the deterring effect of higher costs is being offset, in part at least, by greater efficiency on the part of labor.

Certainly political factors in the field of government controls and in creating public opinion will be of major importance in determining the size of the home building market this year.

Public housing will decline during the first half of 1952. The Public Housing Administration during its fiscal year ending June, 1951, participated in the construction of 91,-

The staff of PIT AND QUARRY extends its thanks to the following organizations for supplying the data used in the preparation of this review and forecast: The American Appraisal Company; F. W. Dodge Corporation; U. S. Department of Labor, Bureau of Labor Statistics; U. S. Department of the Interior, Bureau of Reclamation; U. S. Department of the Army; and the many state highway departments whose replies to our questionnaire are reprinted on the following pages.

319 units. The quota for the current fiscal year is 50,000 units. Whether this agency will expand its activities during the last half of the year depends entirely on the attitude of Congress in an election year.

Industrial Building Construction of factories and other industrial buildings totalled $1,900,000,000 in 1951, a gain of 94 percent over the 1950 figures. Much of this industrial construction has been stimulated by events in world politics and the activities of government agencies in placing defense contracts. It is expected that the trend of industrial building will continue to be quite high and that any reduction in total expenditures for the coming year will not be more than 6 percent beow the 1951 level.

Commercial Building Stores, offices, warehouses, and similiar commercial construction reached a total of $1,300,000,000 in 1951. This represents a gain of 8 percent over similar expenditures in 1950. Government restrictions and controls have been especially severe on this type of building, and there was a progressive decrease in the dollar volume of construction during the last half of the year. A decline of 16 percent from last year was recorded in September; October showed a 39 percent decrease; and November took a 51 percent loss. Whether or not Congress will extend the controls ending in April will probably determine the volume of this type of construction next year.

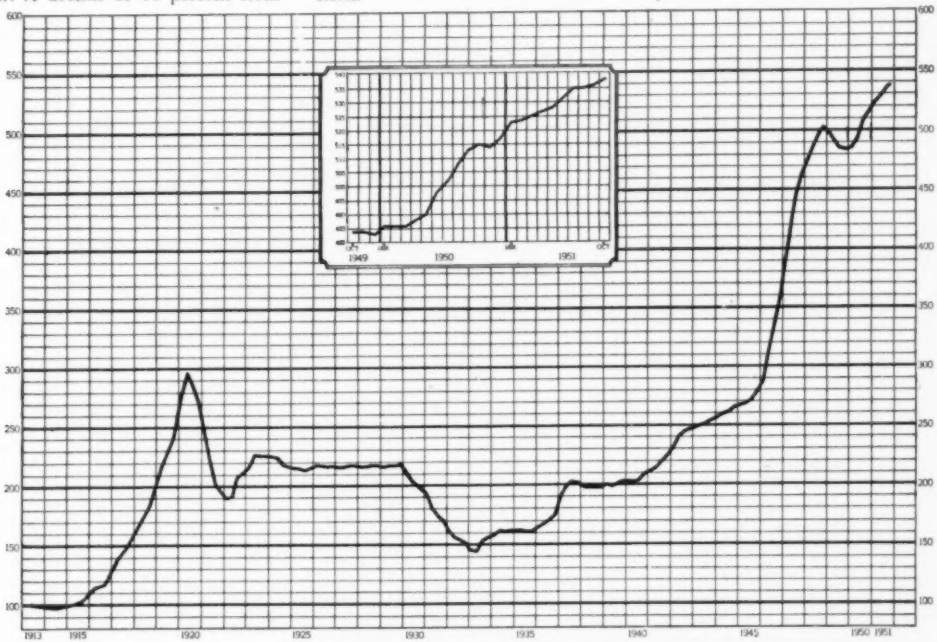
Public Utilities Public utilities, including transportation and communication, accounted for a total construction value of $3,700,000,000 in 1951, which is an increase of 17 percent over the previous year's figure. About $2,900,000,000 was spent in the field of electric power, $372,000,000 was expended by railroads, and $473,000,000 by communication companies. These figures are 17 percent, 18 percent, and 6 percent ahead of the 1950 dollar volumes, respectively.

Authorities predict that utilities will continue to expand their construction programs to strengthen national defense and to supply the new homes and factories that are being built. They also predict that 1952 will see a dollar volume in the utility fields about 31 percent greater than in 1951.

Public Construction Public agencies undertook $9,500,000,000 worth of construction in 1951, which represents an increase of about 28 percent over the 1950 totals. Gains were recorded in all but two fields of public construction — nonresidential buildings and highways. These declined 11 percent and 4 percent in expenditures, respectively. The largest gain was in military and naval building, which jumped 475 percent in dollar volume over 1950 and reached a total of $1,000,000,000 for the year. Public industrial building also recorded a substantial increase of 335 percent in value over the previous year and reached a total of approximately $1,000,000,000. Expenditures for educational construction, chiefly schools, were up 30 percent over 1950, reaching $1,500,000,000 for the year. Highways accounted for a construction volume of $2,300,000,000 for 1951. This is a decline of 4 percent from the 1950 figure. Several factors influenced this decline, as will be seen in the detailed reports following.

Public Law 254, the Defense Department Appropriations bill, approved November 1, appropriated a total of $3,890,296,392 for military public works. This will stimulate

The American Appraisal Company's graph of typical construction costs in the United States.



NOTE — This index applies to construction only and does not include building fixture items such as plumbing, heating, lighting, sprinkler system, etc.; it is based on average costs under normal conditions with no allowance for overtime, premiums on materials, or special conditions. It is the composite of four types of buildings — frame, brick, concrete and steel — in 30 representative cities, and therefore should be used only as a trend as it is not applicable to specific buildings.

Storage reservoir above Grand Coulee Dam is 27 miles long and was an old river bed. Water is raised 280 ft. and stored here for irrigation.

military building and substantially increase the volume of work to be done, although some of the appropriation will be used for work in constructing foreign bases.

Corps of Engineers In addition to direct military spending, the Army Engineers will have $581,217,713 to spend on various river and harbor and flood control projects which are under their supervision. According to statements from the Office of the Chief of Engineers, the projects were screened to provide for defense and for the strengthening of the civilian economy. In the latter category are dams and reservoirs that will produce hydro-electric power. A total of $388,544,100 will be spent on flood control projects which will also provide water for hydro-electric developments; and $192,657,613 will be spent on rivers and harbors.

Practically all of these funds are to be spent on projects already under way, but three new multiple-purpose projects which will have facilities for generating power will be initiated. These combined flood-control-and-power projects are:

The Dalles Lock and Dam, Oregon and Washington; Old Hickory Lock and Dam, Tennessee; and Gavins Point Reservoir, South Dakota and Nebraska.

Other Corps of Engineers flood control projects on which construction will be started are:

Pine Bluff, Ark.; Pueblo, Colo.; Vincennes, Ind.; Hutchinson, Kan.; Aitkin, Minn.; Quinby Creek, Va.,; and Clinton, Ia.

The distribution of Corps of Engineers construction funds by river basins is as follows:

Columbia River Basin	$110,970,000
Missouri River Basin	91,078,700
Mississippi River Alluvial Valley	46,750,000
Gulf Coast, New Mexico, Texas streams	37,156,000
Ohio River	34,392,900
South Atlantic Area	28,545,843
Arkansas-White River	27,577,000
Middle Atlantic Area	27,231,000
Sacramento-San Joaquin River	24,249,000
Upper Mississippi River	13,472,770
South Pacific, Arizona Utah streams	12,095,000
Red Ouachita Rivers	10,095,000
Great Lakes Basin	8,855,000
New England Area	4,031,000
Red River of the North	700,000
Alaska	247,000

Reclamation The operations of the Bureau of Reclamation are of primary interest to the 18 Western states and Alaska. Many of the largest construction projects in the country have been and are being undertaken by this agency, such as Hoover Dam and others, and aqueducts, tunnels, canals, power plants, and distribution lines. As with virtually all federal agencies, the activities of the Bureau are on a June-to-June basis. Latest information on the appropriations for the Bureau show that a total of nearly $296,000,000 will be spent during the current fiscal year.

The states that will have projects of the Reclamation Bureau and the amounts available to June 1952 are as follows:

Arizona	$ 7,076,152
Arizona-California-Nevada	2,416,546
Arizona-Nevada	9,494,603
California	70,011,000
Idaho	1,050,000
Idaho-Wyoming	10,205,421
Montana	24,215,000
New Mexico	2,101,000
New Mexico-Texas	1,291,000
Oklahoma	178,000
Oregon	363,000
Oregon-California	575,000
Texas	101,000
Utah	3,114,000
Washington	37,962,000
Missouri Valley	67,081,000
Colorado	538,000
Kansas	15,836,000
Nebraska	9,024,123
Nebraska-Kansas	3,558,157
North Dakota	1,370,000
South Dakota	1,713,000
Wyoming	4,503,000
Alaska	5,762,000
Transmission facilities (5 states)	16,370,624
	$295,897,616

Highway Construction Highway construction volume, was about $2,300,000,000 in 1951, a decline of 4 percent from 1950. Answers to a survey sent to all state highway departments during December indicate that this decline was very moderate

Irrigation canal is as wide as a four-lane highway in the Grand Coulee Project.

considering the difficulties that highway building encountered during the year. Only the ingenuity of highway officials and engineers in overcoming many obstacles prevented a serious reduction in highway work.

The principal obstacle in more than 75 percent of the states was a shortage of steel, especially structural shapes for bridge construction. A number of highway officials believe that part of the shortage was artificially created by small allocations made for highway use and that steel was actually available in larger amounts than were allotted.

Cement was not the problem in most states that it had been a year earlier. In most cases shortages of cement were local and generally temporary, resulting in slowdowns rather than complete work stoppages. Weather was a factor in a large part of the country. A wet, late spring delayed starting of work in the Middle Western states, while a wet summer prevented a speed-up that would have overcome the late start. One state postponed about 14 percent of the work scheduled as a result of weather conditions.

Labor shortages occurred in about one-third of the states. The principal shortage, as in 1950, was in engineers and skilled supervisory personnel, although common labor was short near some large cities and in the vicinity of some defense industries, especially those that were paying overtime to attract help.

Federal aid to highways was $500,000,000 during the fiscal year ending June 30, 1951. The same amount has been appropriated for the coming fiscal year. Federal funds are matched in equal amounts by the states so that Federal-Aid highway construction will be about $1,000,000,000 for 1951 and 1952. During 1951 these funds were used to construct more than 15,000 miles of highways and 2,400 bridges.

The outlook for 1952 for producers of crushed stone, aggregates, cement, sand, gravel and bituminous mixes used in highway construction is especially favorable. Over 44 percent of the states replying to PIT AND QUARRY'S questionnaire indicated that more money would be spent on highway construction this year. Another 21 percent stated that the same amount of money would be used; only one state indicated a decrease, of 14 percent.

In addition to the regular funds indicated above, several states have bond issues which will be used for modernization programs over the next several years when technicalities of financing, etc., are completed. A number of other states have passed increased truck and other license fees which will add to the highway funds during the year.

The shortage of steel will cause a postponement of many bridge projects although some states are proceeding with foundations, abutments, and approaches in order to speed up actual erection of the bridge when steel is again plentiful. Other states are switching from metal to concrete for bridges, culverts, and drains. It seems likely that many states will continue their activities by diverting the funds normally used for steel work to other portions of the highway program.

In some cases a lack of reinforcing steel is being offset by using thicker slabs and base courses. The trend toward the flexible types of pavements will be accelerated in several states but all of them will spend a greater share of highway funds for pavements of types not affected by steel shortages.

Houston Gulf Freeway, Texas, showing grade separation on a recently completed section.

Toll houses on the new Denver-Boulder turnpike at Broomfield, Colo. This is the only toll collecting point on the highway.

Toll Roads The construction of toll highways is adding many millions of dollars to highway construction. The trend toward separate financing of superhighways is spreading and is becoming an appreciable factor in highway expenditures.

The New Jersey Turnpike Authority is planning to spend $42,000,000 to connect present routes with the Pennsylvania Turnpike and the New York Thruway.

The New York Thruway running from New York City to Buffalo has received approval to use state credit to finance the $500,000,000 bond issue for construction of the road.

The Pennsylvania Turnpike is being extended westward to the Ohio state line, and plans are being made to build connecting routes to the New Jersey Turnpike and the New York state line.

The Ohio Turnpike Authority is planning to start work before April on a 241-mile road at an estimated cost of about $300,000,000.

Oklahoma's Turnpike Authority expects to complete the Oklahoma City-Tulsa route this spring.

The toll road between Boulder and Denver, Colo., is being constructed at an estimated cost of $6,300,000.

West Virginia is marketing a $90,550,000 bond issue for an 85-mile toll highway from Princeton to Charleston.

Several other states are planning extensions of toll routes. Maine is considering an extension of the present turnpike to Augusta or Waterville by way of Lewiston. In Virginia the Commonwealth Turnpike Authority, a privately owned organization, is studying routes for a road around Richmond.

Indiana and North Carolina have passed enabling legislation for toll authorities, but no plans have been drawn.

Present indications are that toll authorities will spend over $1,000,000,000 in the next few years for highway construction. The toll authority engineers face the same problems as the state highway departments and will undoubtedly follow the same pattern in constructing these super-roads, concentrating, for the present at least, on those parts of the projects not requiring critical materials.

Highway Construction By States The expenditures and other important points of highway work by states are given below. This information was supplied during December in response to a questionnaire sent to all the highway departments, and is the latest information available.

ALABAMA—1. During the fiscal year ending September 30, 1951, the State Highway Department paved 136 miles of road on the State Highway System and 748 miles on the County System. The cost of construction on the State Highway System is estimated at $40,000 per mile and on the County System at $20,000 per mile.

2. Construction program for the fiscal year 1952 has not been made as construction activities during this year will depend greatly upon the outcome of a $25,000,000 bond issue which is to be voted on December 11, 1951.

3. Construction activities during the past year have been hindered by shortages of some building materials, mainly steel. It is believed that the 1952 construction activities will also be hindered to a great extent because of the shortage of steel, even if our $25,000,000 bond issue does pass.

Joseph W. Hurt
Chief of Planning Survey

ARIZONA—78 miles of the primary system were reconstructed at a cost of approximately $7,500,000. Virtually the same amount of mileage (77) was built on the secondary system at a cost of some $4,500,000.

The outlook for 1952 would normally be about the same as 1951, based on anticipated revenue for roads; however, with the current upward trend followed by construction costs, it is possible that the mileage figure would be reduced. This could be tempered by the fact that a number of miles now having been under construction for the past two to three years, will be completed in 1952, and naturally credited to that year.

Factors hindering the road building program have been, in addition to increased costs, the unavailability of steel and loss of competent personnel. The steel factor is regarded here as being most serious. Not only is steel for highways inequitably low on federal priority lists, but alloca-

Four-level grade separation on the Hollywood Freeway. This project is in Los Angeles, Calif., at Beaudry avenue.

tions are not being received at anywhere near the appointed time. We are doing everything possible to combat this problem through redesigning structures and culverts and the use of dips as stage construction where feasible. These attempts, however, are merely stopgap expedients, whereas the real core of this critical situation lies at the top level of our defense structure.

R. C. Perkins
State Highway Engineer

CALIFORNIA — For the fiscal year, 1950-51, there were constructed 530 miles of state highways, at a cost of $75,268,000. In the same period construction on the Federal Aid secondary roads in California amounted to 153 miles at a cost of $7,149,000. . .

The construction budget for the 1951-52 fiscal year calls for 471 miles of state highways at an estimated cost of $85,880,000. (The cost figure, like those in the preceding paragraph, is exclusive of right of way.)

Highway construction in California in 1951 has been seriously restricted by the steel shortage. Although we have federal assurance that the steel shortage will ease by the end of 1952, the effect during the current year and the prospect for the next several quarters has caused a slowdown in California's construction program and has increased costs because of uncertain delivery dates. This condition presents a considerable contrast to the more or less guaranteed materials situation on defense contracts.

Cement shortage has not been critical, being localized and temporary. Labor problems have been limited to a few trades and to a few isolated localities. One labor factor which may become increasingly important in the coming months is the guarantee of long hours and overtime which accompanies any large expansion of construction activities such as the current defense program entails. It means increased prices for highway work if contractors and labor are to be secured.

Charles E. Waite
Assistant State
Highway Engineer

COLORADO — Highway Construction Projects Completed in 1951:

	Miles	
Primary F-A highways	167	$ 8,950,587
Secondary F-A highways	236	3,404,315
State Projects	106	791,303
Totals	509	$13,146,205

In addition to the above, the 17.3 miles Denver-Boulder Turnpike, utilizing $6,300,000 from a special bond issue, is virtually completed and will be open for traffic sometime in January, weather permitting.

Recently completed highway and grade separation, on a part of the Missouri highway system in Kansas City.

Highway Construction Projects Planned for 1951 and Included in 1952 Budget:

	Miles	
Primary F-A highways	163	$ 8,261,000
Secondary F-A highways	190	3,605,000
State Projects	688	6,067,000
Totals	1,041	$17,933,000

In addition to the above, the department will improve more than 160 miles of state highways and 150 miles of access roads in the uranium mining district in southwestern Colorado through utilization of $2,338,000 in federal access road funds. This work will get under way within a few weeks.

It is probable that work will start next year on a $3,000,000 access road project to provide a four-lane facility from Pueblo eastward to the Pueblo Ordnance Depot. Although this project has been approved, the amount of federal access road money to be made available has not been determined.

Principal handicap to highway construction in Colorado in 1951 was the lack of steel. We were unable to obtain any of the steel allotted for the third quarter and probably will receive only about half of that allocated for the fourth quarter.

Inasmuch as steel allocations have been increased for the second quarter of 1952, and assurances have been given that steel will not be in such short supply for the second half of that year, we believe that effects of the enforced slowdown should be overcome and that construction should proceed in a satisfactory manner.

In 1951 Colorado let contracts for the greatest amount of concrete paving in the state's history—$2,000,000 for the Denver-Boulder Turnpike and $1,500,000 for the Denver-Castle Rock stretch on State Highway 185, the north-south Interstate System artery. Additional concrete paving contracts anticipated in 1952 include one for $720,000 on a new two-lane roadway which will four-lane the present road. This also is on the north-south Interstate System highway.

Contracts let this year show a definite trend toward the higher type plant mix oiling job as against the familiar road mix for the F-A primary system.

Wallis M. Reef
Public Information Director

CONNECTICUT — As of December 7, 1951, the highway department had completed 15.6 miles of construction involving an approximate expenditure of $3,900,000. This figure includes projects that have been completed in the calendar year. Other contracts were awarded and work started this year but they have not been completed yet.

In 1952 the highway department expects to put under contract 34.2 miles of road at an estimated cost of $8,500,000. In addition, if steel is available for structures, it is proposed to place contracts for another $5,000,000.

This bridge, connecting Portland and Sauvies Island, over the Willamette Slough, was completed in July, 1951, by the Oregon Highway Department.

Several projects which were originally scheduled for construction in 1951 have been deferred, and those projects which require structural steel are being postponed or, in the case of minor structures, redesigned to reduce or eliminate the use of structural steel.

Similarly, it may also be impossible to carry on the program which is contemplated for 1952 within the present allocation of steel for highway purposes.

The highway department proposes to continue construction to the extent possible under its allocation of steel and will advertise projects for grading and drainage as well as those paving projects which can be constructed with relatively small amounts of steel.

G. Albert Hill
State Highway Commisioner

DELAWARE—For the 1951 fiscal year 18.4 miles of primary roads were built at a cost of $2,641,132.00. For the same period 11.9 miles of secondary roads were constructed at a cost of $457,362.00.

For the current biennium, which extends from July 1, 1951, to June 30, 1953, this department has funds in the amount of $15,500,000.00 for the construction and reconstruction of both primary and secondary highways. Our program will include approximately 45 miles of primary highways, 30 miles of secondary, and a number of bridges.

Delaware like other states of the nation experienced some hindrances to its road construction program, important of which were the shortage of steel supplies and the difficulty in recruiting qualified engineering personnel. At the beginning of 1951 a shortage of cement, aggregates, and other materials was expected, but through the foresight of the contractors and the convenient location of this state to the sources of nonmetallic minerals, the expected short supply did not develop.

. . . We expect to continue the practice of the past year in requiring the contractor to certify as to his sources of supply before we award any contract for construction.

We have made no changes in our specifications during the past year nor have we come up with any new construction methods important enough to publicize.

At this time there is a tendency in this state to place emphasis on the flexible type of pavement.

J.A. Joslin
Administrative Assistant

GEORGIA—Contracts were awarded by the State Highway Department of Georgia during the first 11 months of the calendar year 1951 for the construction of roads and bridges as follows:

	Mileage	Costs
Roads on the state highway system	780.9	$17,335,932
County roads	950.6	10,638,207
Total contracts awarded in 1951 (11 mo.)	1,731.5	$27,974,139

It is estimated that the following amounts will be available for awarding highway contracts during the calendar year 1952:

	Mileage	Costs
Roads on the state highway system	800	$20,000,000
County roads	1,000	11,000,000
Total estimated amounts for 1952	1,800	$31,000,000

The shortage of steel has been the principal factor which hindered the highway construction program in Georgia in 1951, although the lack of technical, engineering personnel to make surveys and plans and supervise the construction has tended to reduce the volume of highway work placed under contract.

Roy A. Flynt
State Highway Planning Engineer

ILLINOIS—During 1951 heavy rains throughout the summer caused delays in construction operations and created a peak demand for aggregates and cement near the end of the season. The resulting shortage of materials slowed production on many highway contracts. Due to favorable weather and subgrade conditions, many contractors are still working on paving and bridge projects. For this reason, it is difficult to make an accurate estimate of the volume of construction work which will be completed this year.

The 1951 road construction program included work on both primary and secondary routes. About 450 miles of new surfacing will be completed on the primary highway system, including 60 miles of concrete pavement, 370 miles of bituminous concrete resurfacing on old concrete pavement and 20 miles of bituminous surfaces on existing gravel or crushed stone bases. About 140 miles of new surfacing will be completed on the secondary highway system, including 5 miles of concrete pavement, 30 miles of untreated gravel or crushed stone surfacing, 30 miles of bituminous surfacing on new gravel or crushed stone bases and 75 miles of bituminous surfacing on existing gravel or crushed stone bases.

It is estimated that expenditures for construction and right of way will total approximately $42,500,000 in 1951. This amount includes $2,200,000 for right of way and an expenditure of $6,000,000 for the state's portion of the cost of expressway contracts awarded by Cook County and the City of Chicago.

A larger program is planned for 1952, but many factors may influence highway construction in Illinois next year. Legislation enacted by the General Assembly in 1951 provides for an increase in motor fuel tax and truck license fees. As a result of these increases, we estimate that approximately $154,000,000 will be available for highway construction and right of way in the two-year period beginning July 1, 1951. However, the Sangamon County Circuit Court granted certain petitioners an injunction to restrain the Secretary of State from issuing truck license plates and collecting fees in accordance with the schedule set up in the 1951 legislation. It is anticipated that the case will be appealed to the Illinois

Supreme Court and until that court passes on the ruling of the Circuit Court, an accurate estimate of 1952 construction expenditures cannot be made.

Steel for highway construction has been very difficult to obtain since July of 1951, because of defense requirements. Reinforcement bars, pavement mesh, and steel accessories are being delivered after some delay, but delivery dates are indefinite for structural steel.

The steel shortage will influence the type of highway work which will be placed under contract in 1952. Designs requiring the minimum of steel will be utilized, in order to derive the maximum benefit from the steel allotted to Illinois for highway construction. Old narrow concrete pavements will be widened with concrete and resurfaced with 3 inches of bituminous concrete. Narrow bridges will be widened to meet the requirements of modern high-speed traffic. This type of construction requires the minimum of steel. The Illinois Division of Highways will also award contracts for as much new concrete pavement and new bridge work as steel allotments will permit.

F. N. Barker
Chief Highway Engineer

KENTUCKY—There were 124 miles of primary roads placed under contract in 1951, estimated cost $5,995,119; secondary roads—1953 miles, estimated cost $14,831,784.

Plan for 1952—1940 miles, estimated cost $29,386,590.

Construction work was curtailed in 1951 about 10 percent on account of being unable to obtain steel supplies. For 1952 the present condition will affect the program of highway construction about 50 percent.

D. H. Bray
State Highway Engineer

MAINE—37 miles of Federal-aid primary highways were completed during 1951 at a cost of about $4,700,000.

40 miles of Federal-aid secondary highways were completed during 1951 at a cost of about $2,000,000.

191 miles of state-aid highways were completed during 1951 at a cost of about $2,270,000.

At the present time it is expected that we will build about 140 miles of Federal-aid primary and secondary highways at an estimated cost of $10,000,000 and about 100 miles of state-aid highways at an estimated cost of $1,250,000 in 1952.

Steel supply affected the 1951 program in that it was necessary to juggle projects, omitting some, adding others. The lack of trained engineers hampered the 1951 program, and from all indications, the 1952 program will be limited by the engineering situation. Cement supplies should be sufficient for the coming year with the only cement mill in the state increasing production by about 40 percent. It is expected that the steel shortage will affect some projects. Large air base projects have absorbed a large amount of labor, and wages have been high as a result.

Typical overpass on the completed section of the New York Thruway in rural New York.

Vaughan M. Daggett
Assistant Chief Engineer

MICHIGAN—Miles of primary road built in 1951, which we are classifying as straight state trunklines:

Gravel	60 miles	$1,800,000
Bituminous surface treatment	605 miles	1,200,000
Hot mix bituminous surface	444 miles	666,000
Concrete surface	62 miles	4,340,000
	1,171 miles	$7,916,000

We have no estimate of county secondary roads that were built.

As yet, planning for mileage and dollar expenditure in 1952 is unestablished. We expect at least the same quantity in dollars, but probably not in type.

Factors hindering construction in 1951: cement shortage, steel shortage, and crushed aggregate shortage.

We expect 1952 will be about the same as 1951. We have no comments on changes for specifications, new types of construction, or construction methods.

C. M. Ziegler
State Highway Commissioner

MINNESOTA — During 1951 contracts were awarded for the construction of 682.8 miles of primary roads, involving a total cost of $20,900,000, and 556.5 miles of secondary roads, involving a total cost of $8,700,000.

Our tentative 1952 construction program contemplates the construction of 886 miles of primary roads at an estimated cost of $22,500,000 and 453 miles of secondary roads at an estimated cost of $8,000,000.

During 1951 construction was seriously delayed by wet weather. Rainfall in most of the state during this year averaged 35 percent more than normal. As a result, many of our contracts which should have been finished are being carried over until 1952 for completion. Numerous bridge contracts have been delayed because of our inability to secure delivery of steel. When it became apparent that our bridge construction program might be affected by the steel shortage, a large number of our bridges, which would normally have been programmed for contract in 1951, were deferred. Our normal bridge program has, therefore, been more seriously affected than would be indicated by actual delays on bridge contracts awarded.

O. L. Kipp
Chief Engineer

MISSOURI—For the first 11 months in 1951 our contracts awarded were:

Major system	$20,411,088
Supplementary system	8,503,884

We are more at a loss than usual to tell you what to expect in 1952, principally because of pending legislation for additional revenue. At the present time there are bills in the Senate which have already passed the House which will increase the gasoline tax from 2c to 3c a gallon and increase the commercial motor vehicle registration fees. While it looks as if they will be finally approved, we are unable to give a very definite answer until we know for sure that they will become law.

Bridge and traffic interchange connecting Main and South Cedar streets in Lansing, Mich.

At the moment it might be safe to expect the 1952 construction program to be in about the same amount as has been the 1951 work. On the other hand it could be some larger and likewise it could be smaller, the latter depending more on the international situation than anything else.

G. M. Threlkeld
Director of Information

MONTANA—Listed below is a short construction summary for the year 1951 and a tabulation of work under contract listed for completion during 1952.

	Mileage	Contract Amount
1951		
Primary system	112.180	5,650,045.78
Secondary system	185.050	2,374,697.67
1952		
Primary system	111.278	8,098,377.35
Secondary system	149.228	3,511,255.90

The above contract amounts include bridges, overpasses, underpasses, and miscellaneous grade separation projects.

The major factor that hindered our road-building efforts in 1951 was the unseasonable wet and cold summer. This factor postponed the completion of seven projects totalling $1,158,561.71. The labor supply was plentiful, cement in quantity, and no major delays due to steel supplies.

Present conditions will not have much effect on our program for 1952, unless the steel situation should tighten up considerably.

W. J. Leary
Asst. State Highway Engineer

NEW YORK—In New York State, the state highways are considered the primary system and the town and county roads the secondary system. Through November 30, 1951, the State Department of Public Works has awarded on state highways some 370 contract miles of construction and reconstruction work for a value of nearly $55,000,000. The department anticipates awarding in December, 1951, an additional 100 miles at a cost of over $13,000,000.

The 1952 construction program is under study at the present time and no figures are available.

B. A. Lefeve
Director,
Bureau of Highway Planning

NORTH DAKOTA—Highway construction in North Dakota was hampered during 1951 due to an adverse construction season. Frequent precipitation for extended periods and over extensive areas of the state was highly beneficial to our rural and general prosperity but retarded highway construction work far beyond that which is normally anticipated. The result is a large carry-over of our highway construction contracts and a dollar value of completions below our normal program.

On the primary system 310 miles of grading were completed at a cost of $4,239,000; 178 miles of asphaltic concrete surfacing at a cost of $2,302,000; 130 miles of gravel surfacing costing $228,000; and miscellaneous bridges and structures at a cost of $620,804.92.

On the county secondary system 390 miles of grading, gravelling and miscellaneous structures were completed at a cost of $1,759,000.

The steel shortage has delayed a number of structural projects, especially those requiring structural steel. Projects which normally would be completed during the current year are now held over pending receipt of required steel, both structural and reinforcing.

The labor supply was adequate until about the middle of summer and became quite acute for the remainder of the season. Defense areas and defense work has a tendency to draw upon the skilled and intermediate grades of labor normally following the highway construction industry.

For 1952 we have planned a construction program of approximately $11,000,000. Structure types, surfacing, and grading contracts will of necessity, be designed and awarded to the best advantage of the available labor and existing material conditions.

M. P. Wynkoop
Chief Engineer

OHIO—There were 845 miles of primary construction in 1951 at a cost of $51,500,000. There were 175 miles of secondary construction in 1951 at a cost of $3,800,000.

In 1952 we are tentatively planning 500 miles of primary construction at an approximate cost of $38,000,000 and 200 miles of secondary construction at an approximate cost of $7,000,000.

The most serious factor that we had to consider in our road building in 1951 was the steel situation. We were able to continue our program on all projects. However, we encountered many delays because of the delivery of steel. We will have two projects in our state which have been curtailed because of steel, and it looks, at the present time, as though we will be unable to obtain this steel during the entire year of 1952, unless additional allocations are granted our state to cover these projects. We did experience some delay in construction because of the cement situation. However, this cleared itself in a comparatively short time. All projects on which we experienced this situation were continued to completion.

The steel situation is going to be the most serious factor in our 1952 construction program. The allocation to cover our needs seems to be the big stumbling block in securing materials for our projects. Information from reliable sources informs us that if we give the companies the allocations, they can furnish the steel. We have some projects for 1952 which will have to be carried into the fourth quarter of 1952 or

the first quarter of 1953 allocations, on the present basis of distribution

Outside of a few small changes in specifications to make them more workable, we feel that our specifications are sufficient in our state to carry on our work in a satisfactory manner.

L. F. Schaeublin
Asst. Director and Chief Engineer

OREGON—Mileages of construction performed during 1951 and tentatively planned for 1952 are as follows:

	Miles				
	Primary	Secondary	Local	Total	No Segregation
Grading	120	65	25	210	250
Surfacing	165	90	45	300	250
Oiling	20	50	10	80	200
Bit. macadam	25	—	5	30	50
Paving	135	25	20	180	250

Construction expenditures for 1951 and estimated for 1952 are:

	1951	1952
Primary highways	$14,500,000	$28,000,000
Secondary highways	2,800,000	3,000,000
Local highways	2,100,000	2,000,000
	$19,400,000	$33,000,000

Oregon's construction program for 1951 was slowed down to the extent of about $1,250,000 by inability to obtain deliveries of steel. Some additional slowdown or delay has resulted from difficulties experienced in the obtaining of equipment and equipment parts.

Difficulty in obtaining steel has led to some utilization on grading and paving work of funds which otherwise would have been used on structural jobs.

We anticipate that present conditions will affect our 1952 program in about the same manner that similar conditions affected our 1951 program.

R. H. Baldock
State Highway Engineer

PENNSYLVANIA — We have not as yet had the opportunity of determining the classifications of the roads built in Pennsylvania in 1951. According to our best estimate, we will complete the construction, reconstruction and resurfacing of approximately 1,700 miles of state highways. The estimated dollar value for work completed in 1951 will be $100,000,000.

In 1952 we expect to complete a program of approximately 1,700 miles of construction, reconstruction, and resurfacing at an estimated cost of $110,000,000.

The principal hindrance to our road building efforts in 1951 was a shortage of steel, especially structural steel. While there were temporary shortages of cement and other materials, they were alleviated within a very short time. A slight shortage of labor developed during the year, but not of sufficient size to interfere with the progress of our work.

In 1952 we are anticipating a continuation of the present shortages, especially of structural steel, which will probably be determined by the actions of the constituted federal authorities.

It is our intention to proceed with our program at full speed ahead. We will continue to construct the foundations, abutments, and piers of our bridges and build the superstructures as rapidly as the Federal Government makes the steel available.

We have great confidence in the statements of responsible steel company executives that there will be a sufficient quantity of steel available for highway construction in 1952, if the restrictions imposed by the Federal Government do not interfere with the normal supply and demand.

E. L. Schmidt
Deputy Secretary of Highways

SOUTH CAROLINA — From October 1, 1950, through September 30, 1951, construction awards were made as follows:

	Miles	Amount	Bridges
Primary system	151.7	$7,825,063	$1,888,475
Secondary system	966.0	10,869,752	672,760

S. N. Pearman
State Highway Engineer

TEXAS—

	Miles	Cost
Construction on primary highways completed during 1951	769	$46,776,210.92
Construction on secondary roads completed during 1951	3,743	$48,882,744.76
Construction planned for 1952	4,500	$99,000,000.00

The factor affecting road-building efforts most during 1951 was the shortage of steel.

It is too early to estimate the effect in 1952 of world conditions on road construction in this state, but it is anticipated that construction will fall below that which might have been possible otherwise. It appears probable that steel will continue in short supply.

Wherever possible this department is making use of designs calling for minimum use of critical items.

D. C. Greer
State Highway Engineer

VERMONT—In 1951 the Vermont Department of Highways completed work on 8.5 miles of primary road construction at a cost of approximately $356,000. Secondary road construction amounted to 18.7 miles at a cost of approximately $676,000. In addition to this, we completed 0.684 mile of urban construction at an approximate cost of $144,000.

Our tentative planning for 1952 will provide for about the same amount of construction as the previous year.

Cement and steel shortages have definitely handicapped our work during 1951, resulting in delays of

• Aerial view of a completed section of the New York Thruway near Saugerties.

sufficient proportion to suspend work on some projects. Vermont's bridge program has been stopped since July 1, 1951, inasmuch as steel allotments for the third and fourth quarter of 1951 and the first quarter of 1952 have been only sufficient to cover revalidations from the second quarter of 1951. Presently some $987,000 worth of construction has been stopped. This has confronted both the contractors and the department with considerable inconvenience. Changes of design and substitutions have been necessary and have caused delays. The normal flow of business and private traffic which is dependent upon the roads and bridges under discussion has been restricted.

Labor shortages have been evident near our industrial areas but at present this is not serious.

Present conditions may result in tremendous hindrance to our 1952 program. According to present tentative allotments, Vermont will receive only about 15 percent of its minimum steel requirements for the second calendar quarter, 11 percent for the third quarter and 7 percent for the fourth quarter. According to the National Production Authority and the Defense Production Administration, only routine maintenance is now considered essential in highway work.

In reply to your last question, I will state that this department is attempting to accomplish as much construction as possible with the available amounts of critical materials. This is being done through directing our efforts toward substitutions wherever practicable. The following are some of the substitutions being used and our specifications are being revised accordingly:

Fibre drain pipe substituted for metal pipe

Two-cable guard rail substituted for metal guard rail

Wood guide posts substituted for cable guard rail

Concrete pipe substituted for metal pipe

T-beam bridges substituted for wide flange beam bridges

Timber piling substituted for steel piling

We are even reclaiming highway signs made from boiler plate metal so that the metal can be used for minor repairs on equipment. Patches for truck bodies, brackets, braces, etc., can be fabricated from these old signs and welded into position.

H. E. Sargent
Chief Engineer

WASHINGTON—

Primary	Miles	Cost
Grading only	9.4	$1,391,537
Bituminous surfacing, incl. light bituminous	630.6	$3,764,367
Portland cement concrete paving	5.5	$ 363,618
Grading & surfacing with crushed stone	35.0	$3,377,133
Bridges	2.7	$8,606,684
	733.2	$17,500,339

Secondary	Miles	Cost
Bituminous surfacing, incl. light bituminous	105.8	$ 976,971
Grading & surfacing with crushed stone	28.2	$ 474,682
Bridges	0.4	$ 570,420
	134.4	$2,022,073

	Primary	Secondary
Stockpiling crushed stone & mineral aggregate	$1,296,145	$ 121,616

The totals above do not by any means include all expenditures and activities of the Department of Highways. . . We expend about $38,000,000 annually from normal motor vehicle funds for construction and maintenance of the state system. This includes also some money for development roads into mining sections, some for parks, and some for expanding housing facilities for our shops and division headquarters.

Work for 1952 will be substantially the same as tabulated hereinbefore for 1951, excepting as noted above, that the bond program will add about $15,000,000 to total expenditures, provided that we are able to get steel for bridges—a perplexing problem because completion of bridges often is the key to opening important new sections of highway to travel.

To your question what factors hindered road building in 1951, we may say that there were none of serious consequence. Toward the end of the year we have felt the pinch of steel. We have not suffered from lack of other materials such as lumber, cement, etc., and there has been ample supply of labor. The inflationary trend has increased construction costs by perhaps 20 percent above costs that would have prevailed upon the same projects a year earlier.

W. A. Bugge
Director of Highways

WEST VIRGINIA—

Primary Roads

Maintenance Division:

Plant mixes, road mixes, light surface treatments and seals, 245.8 miles; cost, $3,535,955.00

Construction Division:

New construction and resurfacing, projects let to contract, 306.141 miles; cost, $6,884,721.00

Secondary Roads

Maintenance and Prison Labor Divisions:

New construction, 901.5 miles; cost, $5,510,430.22

Construction Division:

New construction and resurfacing projects let to contract, 335.313 miles; cost, $3,476,655.48

I can advise you at this time that the commission's 1952 expenditures and mileage in the Construction, Maintenance, and Prison Labor Divisions will approximate the same as 1951, provided steel is available. Our program was hindered somewhat during the past year on account of restrictions on steel products and cement.

As to the effect of present conditions on our 1952 program, I can only inform you that construction of bridge projects, especially superstructures, will be deferred due to steel restrictions.

Kay Cavendish, Commissioner

WISCONSIN — Contracts and day labor agreements with the counties negotiated in 1951 for work on the Wisconsin State Trunk Highway System are as listed below. Contract mileage is listed rather than net mileage because of construction by stages.

	Mileage Contracted 1951	Contract Amount
Primary System		
Grade	199.1	$4,765,500
Gravel or crushed stone	182.9	1,927,400
Grade and gravel or crushed stone	23.6	1,483,000
Bituminous surfacing	497.3	9,410,500
Concrete surfacing	65.1	5,405,600
Structures	....	1,919,100
	968.0	$24,911,100
Secondary System—on S.T.H.		
Grade	4.9	$ 106,300
Gravel	62.6	366,600
Grade and gravel or crushed stone	23.4	392,600
Bituminous surfacing	187.5	1,726,000
Structures	....	770,000
	278.3	$3,361,500

The 1952 expectations of work on the State Trunk Highway System to go to contract encompass 908 miles at an estimated total cost of $55,000,000.

Factors hindering 1951 highway construction were low availability of structural steel, inclement weather, and shortage of cement in that order.

Our 1952 program is projected on the basis of availability of materials and labor and premised on a normal weather construction season.

E. L. Roettiger
State Highway Engineer

1951 Fifth Straight Peak Year

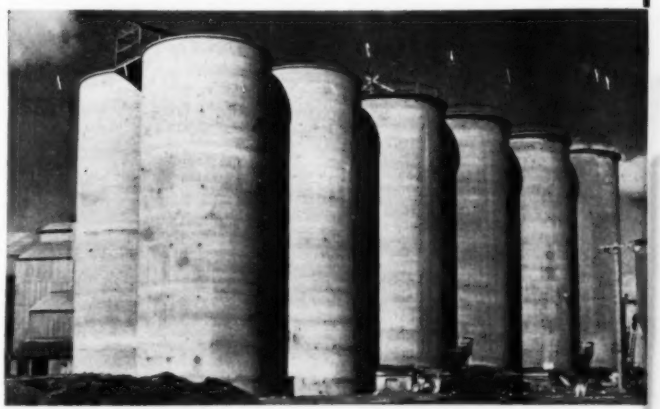
By WALTER E. TRAUFFER

Production, shipments, values reach new highs: mill stocks above 1950 record low.

The portland cement industry in the United States in 1951 for the fifth consecutive year set new all-time records in production and shipments. Complete official figures are available only through November, and these show production then to have been 8 percent and shipments 6 percent ahead of the first 11 months of 1950. Using these percentages for the full year with some allowance for the usual year-end falling off in demand the total 1951 production should be about 245,000,000 bbls. and shipments about 242,000,000 bbls. This compares to the production of 226,026,000 bbls. and shipments of 227,757,000 bbls. in 1950. Again these records were possible only because of the continued efforts of a large part of the industry to overcome the persistent shortages of cement by getting maximum production from existing facilities and its courage in continuing a vast expansion program in the face of high construction costs and possible restriction of production in case of all-out war.

During 1951 the industry produced at a high percentage of its rated capacity, undoubtedly exceeding the 81 percent record level of 1948 and 1949 and probably topping even the estimated 86 percent record of 1950 which was achieved in spite of strikes and other serious handicaps to production. Using the 1950 official figures and our 1951 estimates of production and capacity we estimate that the industry operated at about 91 percent of its capacity in 1951. Handicaps to production, such as coal and freight car shortages, strikes, etc., were probably less than in any other postwar year, certainly considerably less than in 1950. Many companies reported the greatest volume of production and the highest percentage of capacity in their histories.

Again in 1951 shipments exceeded production in the first 10 months of the year but the apparent low point of cement stocks on hand, 6,944,000 bbls. at the end of October was 17 percent over the October, 1950, low of 5,958,000 bbls. and 22 percent over the October, 1948, record low level of 5,668,000 bbls.



The Calaveras Cement Company, San Andreas, Calif., increased its cement storage 50 percent in 1951 by building the four silos at the left, making 12 in all.

Producers from all parts of the country report record production and shipments in 1951 but few shortages and those local and temporary. It is felt by some that these shortages were not real, but were due to uneven distribution of the supply, and that the industry produced enough to meet all demands. Most of them feel that demand in 1952 will be near the 1951 level but a few predict drops of 10 to 15 percent unless controls are relaxed. Judging from these reports also it seems that there may be temporary shortages in the South Atlantic states due to demands for defense projects.

These producers also report a number of interesting trends. There is a continued increase in the percentage of bulk cement being used, part of this being due to the many large construction projects now under way. There has been a continuation of the trend toward truck shipments not only in quantity but also in distance hauled. This condition is attributed by producers only partly to car shortages and increased freight rates and the trend is expected to continue. Many commented on the growing percentage of their output which is being used in ready-mixed concrete. A number also reported a continued increase in the demand for mortar and masonry cements and the records show that the facilities for the production of these items were considerably expanded during the year.

PRODUCTION HANDICAPS

The fact that handicaps to production were probably less in 1951 than in any other recent year was undoubtedly a contributing factor to the record output. There were few strikes and these were of short duration and at individual plants or highly localized. Car shortages were apparently less severe than in 1950 and there were no serious fuel shortages. Labor shortages existed in some places but we have heard of no cases

where they adversely affected output. The devastating floods of the Missouri River and its tributaries last summer shut one cement plant down for about three weeks. The shortages of steel and other materials have made it difficult for cement plants to get repair parts, equipment and supplies but so far this has held back expansion and repair programs but has as yet not seriously affected output. What a continuation of these shortages would do to output in 1952 is another question but there is a feeling among producers that some of these materials may soon become more plentiful.

One or two producers report that they have experienced some difficulty in getting emergency repair parts. It is felt that this is partly due to lack of the raw materials needed to make these parts and, some feel, also to the red tape that handicaps procurement. A few producers also expect some labor trouble early in the year when many contracts come up for negotiation and there is some feeling that such negotiations may be more prolonged than in 1951. Only a few reported car shortages during the year and these were for such short periods that, although they delayed shipments, they did not affect production.

Answers to questionnaires sent to the heads of cement companies throughout the United States indicate that most of them believe the most important problem of the industry to be the government controls which were imposed in 1951. These controls limit the use of critical materials in construction, the supply of repair and replacement parts and equipment for the industry, impose credit restrictions on home building, and freeze cement prices while at the same time granting increases in wages, freight rates and other items entering into manufacturing costs. These controls changed not only the market for cement, but the entire scheme of acquiring materials, machinery, equipment and labor for keeping plants in operation. Some expect that price relief will be granted soon to balance this condition which, with tax increases, in 1951 greatly reduced the profit margin of the industry and threatens to put some in the red during 1952 in spite of the fact that output and percentage of capacity being used are both at record levels. The industry has done an excellent job of expanding its facilities to meet demands but it seems doubtful the industry can keep this up if profit margins are cut as sharply in 1952 as they were in 1951.

Construction view of Canada Cement Company's Exshaw, Alberta, plant showing the new stack and kiln piers.

Some producers believe that in the second half of 1952 the shortage of steel and other scarce items will be overcome, resulting in the relaxation of controls and the building of more badly-needed concrete highways and public improvements.

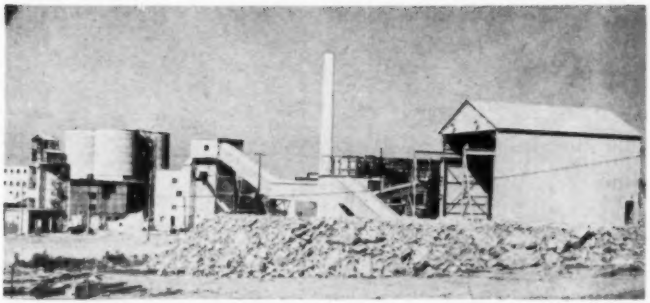
VALUE AND PRICES

Again no official information is available on the net mill value of the cement produced during the entire year but it is certain that this established an all-time record total for the sixth consecutive year by a wide margin. With an increase of about 7 percent in shipments and perhaps 6 percent in prices at the mill the 1950 record income of $535,321,123, was probably exceeded by about 14 percent for a total value approaching $610,000,000 in 1951. The average mill value of portland cement in 1948 was $2.18 per bbl., in 1949 it was $2.30 per bbl., in 1950 it was $2.35 per bbl., and in 1951 it was probably about $2.53 per bbl., the highest price in nearly 70 years. The total value of portland cement shipped during the first three quarters of 1951 was $469,784,000 and the average value was $2.53 per bbl.

COSTS AND PROFITS

As in every year since World War II the cost of producing cement went up more than prices in 1951, and again there is nothing to indicate that the situation will be any different in the coming year. There were increases in wage rates, in the cost of fuel, supplies, equipment, etc., in freight rates and in practi-

Aerial view of Belleville, Ont., plant of Canada Cement Company, where a third kiln is now being installed. This will increase the annual capacity from 2,600,000 to 3,800,000 bbl. (Canadian) by the fall of 1952.



The new plant of the Canada Cement Company at Havelock, New Brunswick, with the crusher building and storage in foreground. This plant has an annual capacity of 800,000 Canadian bbl.

cally every other item which enters into the manufacture of cement. The increased productive effiicency of the industry due to the extensive plant improvements and the new plants added in recent years have probably only partially compensated for these increased costs, in fact they probably no more than balanced off the excessively high cost of operating obsolete plants and equipment which would in normal times not be used at all. Operating equipment at over its rated capacity to meet the high demand for cement is also costly, especially since kilns use more fuel per barrel when pressed and also burn out linings and otherwise deteriorate more rapidly.

Cement prices, as we have already stated, did increase somewhat during 1951 but they still lag far behind other building materials, having increased only 47.2 percent from 1926 through October, 1951, according to the Bureau of Labor Statistics. The increase in the cost of all building materials during this period was 123.6 percent; that of lumber was 244.4 percent. The cement industry has made every effort to absorb increased costs but there is a limit to what can be done in this direction even when operating at a high percentage of capacity.

There is as yet little information on the profits made by cement companies in 1951 but there is no doubt that they fell off in the latter part of the year due to the higher taxes. In 1950 most cement companies reported profits and for the entire industry the increase is estimated at about 7 percent over 1949. The increase in sales over 1949, however, was about 13 percent. Profit figures are available for some companies for the first 3 or 6 months of 1951 and from a few for 9 months and these about held their own with comparable periods of 1950, indicating a probable drop for the full year. Dollar volumes of sales were up sharply, however, possibly as much as 20 percent. With lower sales volume and higher costs in prospect a sharp drop in profits may be expected in 1952 unless price relief is granted.

At present costs and prices the cement industry must operate over probably the highest break-even point in its history in order to show a profit and any sharp drop in demand would quickly put many companies in the red. Further increases in the price of cement are imperative to put the industry in a position where it can face future developments with confidence.

SHORTAGES OF CEMENT

Although temporary shortages of cement developed in some areas during the year the supply situation was much better than in 1950 or 1949. Apparently the capacity of the industry has about caught up with the demand. NPA recognized this fact when, effective November 7, 1951, it removed cement from the list of scarce materials on the ground that it is "now in more plentiful supply." The chief complaint among users of cement was not so much about shortages as the fact that they were at times forced to use out-of-area cement at substantially higher prices than that from their usual local sources. Late in the year OPS granted permission to the ready-mixed concrete industry to pass on this increase in cost to their customers. In 1950 many producers had to set up allocation systems of their own so that cement could be equitably distributed among their customers. Only a few producers reported having to resort to this method in 1951.

FUTURE PROSPECTS

With world conditions as uncertain as they are it is difficult to estimate prospects for the cement industry in 1952. If defense production requirements keep near schedule from 50 to 60 million bbls. of cement will be needed for the 1952 program. In spite of building restrictions public and private construction are holding up quite well and prospects are about the same for 1952. Authorities predict a total dollar volume of all construction about 10 percent under 1951. In 1951 many construction projects were held up due to shortages of steel and other materials and indications are that these may soon be in more plentiful supply.

Taking all factors into consideration it is difficult to see any sharp falling off in the demand for cement in 1952 or, for that matter, any sharp increase. Producers in general feel that demand in 1952 will approach that in 1951, and not one predicted a loss of more than 10 or 15 percent in volume.

EXPORTS

Exports of portland cement from the United States in 1951 apparently were up considerably from the preceding year. According to the Department of Commerce, exports through August of 1951 totaled 2,061,506 bbls., and it is estimated that the total for the year will be about 2,800,000 bbls. This is an increase of about 33 percent from the 1950 total of 2,062,514 bbls. Canada was again the biggest customer and several producers report that dealers located near the border shipped heavily into Canada. Other countries which formerly imported cement from the United States apparently were more nearly self-sufficient in 1951 as a result of cement plant expansion programs of their own.

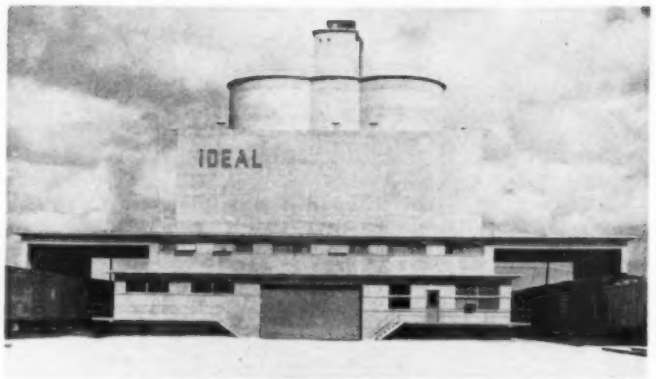
Considerable cement was shipped from this country to overseas bases, some in Alaska and Hawaii but many in other countries, but figures on the latter are apparently not included in official export statistics.

IMPORTS

According to the Department of Commerce a total of about 660,000 bbls. of cement was imported into the United States through August of 1951. This indicated a total for the full year of perhaps 800,000 bbls., considerably under the 1,390,000 bbl. total in 1950. Much of this is reported to have come from Germany and other Western European countries. The Economic Cooperation Administration early in the year completed a survey which indicated that the Western European nations could supply for a short time up to 20,000 metric tons per month. These

countries included the Federal Republic of Germany, Belgium, Italy, Denmark, Sweden and Norway. With the help of the Marshall Plan these nations had by 1950 increased their production to levels about 40 percent over their prewar output, outstripping for the present their growing home consumption.

Much cement was also shipped in from Puerto Rico but this is not considered to be importation. The Puerto Marine Corp. of Puerto Rico shipped in many thousands of barrels of bagged cement to Florida and has announced that it would build a cement storage and bagging plant at Port Everglades, Fla. Bulk cement would be shipped in from the company's plant in Puerto Rico.



The new $500,000 cement packing and distributing plant of the Ideal Cement Company at New Orleans, La. Bulk cement is received by barge from the new plant at Baton Rouge.

CAPACITY INCREASE

The cement industry in the United States and its possessions in 1951 again increased its capacity considerably, possibly more than in 1950 or in any other year since before the depression. Three new plants were completed in 1951, at least 20 completed important improvement and expansion programs and dozens of others made minor additions. In the latter category particularly our information is necessarily incomplete. It is estimated that these plants have added a total of about 37,000 bbls. daily or 12,000,000 bbls. annually to the capacity of the industry. Altogether 13 new kilns are known to have been installed. Only one plant, that of the Green Bag Cement Co., Kenova, W. Va., was shut down in 1951. It is reported that this plant has been sold and will be dismantled. Improvements made at other plants on which we have no information would probably add considerably to these totals. On the other hand some of the new equipment installed replaced obsolete equipment which was then taken out of service so this might balance off. Most of the equipment installed, however, was new capacity and some of this was for the manufacture of masonry, mortar and other special cements.

Official figures on the capacity of the cement industry show 254,272,378 bbls. at the end of 1948, 258,948,399 bbls. in 1949, 259,448,000 bbls. at the end of 1950, and 271,873,000 bbls. at the end of September, 1951. We estimate that the industry's annual capacity at the end of 1951 was about 272,000,000 bbls. with 154 plants in operation. While our advance predictions in previous years were fairly accurate they were made under more stable conditions when the only handicap to expansion was the machinery manufacturers' inability to meet demands and no government permission was necessary. We believe, however, that if all projects now under way or definitely planned are completed the capacity of the industry at the end of 1952 should be about 282,000,000 bbls. annually.

The three new plants which went into operation in 1951 are those of: the Lone Star Cement Corp. at Catawba Creek, Va.; the Marquette Cement Mfg. Co. at Brandon, Miss.; and the Ideal Cement Co. at Baton Rouge, La.

FUTURE INCREASES

As has been stated, the information available on the amount of work under way is incomplete and it is uncertain how much of it will be completed in 1952. It is also uncertain how much other work will be planned for completion in the coming year. There are two completely new plants in various stages of completition which are sure to be ready in 1952. These are: the Lone Star Cement Corp.; Sweetwater, Texas; and the Lehigh Portland Cement Co., Flager Beach, Fla. The important plant expansions of the Alpha Portland Cement Co. at Jamesville, N. Y., and the Carolina-Giant Portland Cement Co. at Harleyville, S. C., are described as new plants and these are also expected to be in operation during 1952. These four plants will have a combined capacity of 12,700 bbls. daily or 4,100,000 bbls. annually.

A tremendous amount of plant improvement and expansion work is under way or definitely planned for completion in 1952. According to our incomplete information 25 plants have major programs under way which will increase capacity 34,700 bbls. daily or 11,100,000 bbls. annually. These plants, with the new plants listed above, will install 19 new kilns.

There are also several plants for which plans have been announced but which would not be completed in 1952. The Missouri Portland Cement Co. is reported to be planning a new plant at Sugar Creek, near Independence, Mo., which, when completed in 1952, would double its capacity there. This plant will have a capacity of 100,000 bbls. monthly and engineering and construction will be done by the MacDonald Engineering Co. The existing 100,000 bbls.-per-month plant is to be replaced within five years by a duplicate new plant.

As usual rumors about new plants to be built were numerous during the year, particularly in Canada. In the United States plants were proposed for South Carolina, North Carolina, Virginia, North Dakota, California, Hawaii, etc., but to our knowledge only two of these have passed beyond the talking stage. The nearest to fruition seems to be the proposed plant of the American Cement Corp. of Florence, S. C., for which a certificate of necessity was recently granted by the NPA. Plans for this plant call for a capacity of one million barrels annually. The Universal-Atlas Cement Co. early in 1951 completed the arrangements for acquisition of a 680-acre tract in Botetourt County, Va., where, it is announced, a plant is to be erected at some future date. The proposed state plant for North Carolina is apparently still far off. A commission appointed to locate suitable deposits reported that the most promising location seemed to be in the vicinity of Maple Hill, Pender County and some options have been taken in that area. Work is reported to have started on the site of the proposed cement plant of the Ce-

ment Corporation of America near Ojai, Calif. Early in 1951 the Whitlock Mining Co., Los Angeles, Calif., was reported to have applied for a $15,000,000 Federal loan for the development of a limestone deposit near Lake Hemet in the San Jacinto Mountains and the construction of a cement plant in the Hemet-San Jacinto valley. A proposed feature was the use of a 12-in. pipe, 15 mi. long, to transport pulverized limestone in water downhill from the mountain quarry to the plant in the valley.

POST-WAR GROWTH

Since World War II the cement industry in the United States has undergone a vast expansion through the construction of new plants and the enlargement of existing plants. Fifteen new plants have been built or are under construction and dozens of others have been drastically enlarged. The capacity of the industry was increased from 241,621,871 bbls. annually at the end of 1946 to 259,448,000 bbls. in 1950 and about 272,000,000 bbls. at the end of 1951. Three new plants were completed in 1951, four in 1950, one in 1949, two in 1948, and one in 1947. Four new plants under construction are expected to be in operation in 1952 but as yet no other plants are known to be definitely planned. This may indicate an industry feeling that the redistribution of production facilities to provide cement at equitable cost to every important consuming area has now been accomplished. It seems likely that future expenditures by the industry will be large but that they may be confined chiefly to enlarging, and especially to increasing the efficiency of, existing plants. Many cement plants are old and greater returns can usually be expected from plant modernization than from building new ones. Most cement plants have now been operating at full capacity for 4 or 5 years, stopping only for repairs when there is a major breakdown. As a result many of them need extensive rehabilitation and replacement of equipment. With steel and other materials apparently coming into more plentiful supply it looks like a good year ahead for the manufacturers of cement mill machinery.

It is interesting to note that, of the 16 new plants built since World War II or now under construction in the United States and in Canada, only three have been dry process operations. In that period also two dry process plants have been converted to the wet process and only one plant has been converted from the wet to the dry process. This is in line with the pre-war trend which had resulted in the industry's capacity being about equally divided in the early 40's. Now, apparently, the bulk of the producing capacity is wet.

STORAGE CAPACITY

In earlier years, especially when the percentage of productive capacity utilized was lower than it is now, cement plants shut down for a period during the slack winter season because of the falling off of demand and because of their limited facilities for storing finished cement. It was during this period that most of their rehabilitation and repair work was done. In recent years, however, this condition has changed and plants, in the cold-weather areas particularly, have greatly increased their storage facilities for both clinker and cement so that they can operate at normal capacity throughout all or most of the winter if desired. An example is Medusa's plant at Dixon, Ill., which is rated at 1,750,000 bbls. annually and has storage facilities for 500,000 bbls., enough for normal operation all winter. Nearly every plant expansion and improvement program in recent years has included expansion of storage facilities.

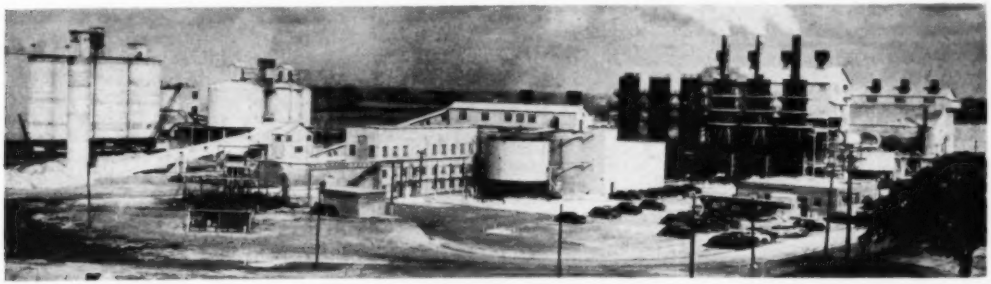
CHANGES IN OWNERSHIP

There were few changes in ownership in the cement industry in 1951. Late in the year the stockholders of the Ideal Cement Company, Denver, adopted a plan of reorganization under which officers were authorized to start negotiations for the acquisition of the Pacific Portland Cement Co., San Francisco, as a subsidiary of Ideal. This plan includes an exchange of stock and the increase of Ideal's capital stock from 1,500,000 to 2,000,000 shares. Pacific Portland operates three cement plants, at Redwood City and San Juan Bautista, Calif., and Gold Hill, Ore., with a rated capacity of 4,000,000 bbls. annually. Ideal now operates 12 plants and is said to be the fourth-largest producer of cement in the United States. If this deal goes through it would become the third-largest, it is said.

Effective November 30, 1951, the Lawrence Portland Cement Co. was merged with the Dragon Cement Co., Inc. Dragon has taken over both the Lawrence plants at Northampton, Pa., and Thomaston, Me., together with offices and all assets of every description. The business will continue to be operated as it has been heretofore, with no change in management, personnel or policies.

PRODUCTIVITY

Some months ago the Bureau of Labor Statistics, U. S. Department of Labor, released a detailed analysis of productivity in the cement industry which was reprinted in full in the November, 1951 issue of PIT AND QUARRY. This release showed that the number of man-hours required to produce a barrel of cement was reduced 8 percent between 1949 and 1950 and 24 percent between 1939 and 1950 to the lowest level on record. Using a 1939 index of 100 man-hours per unit of output the figure dropped to 76.5 in 1950. In the record low-output war year of 1944 it reached a peak of 119.4. Through the years there has been a very close inverse relationship between the trend of man-hours ex-



Ideal Cement Company's new plant at Baton Rouge, La., converted from a wartime alumina plant by adding much new equipment. Annual capacity, 1,500,000 bbl.

pended per unit of output and the percentage of plant capacity utilized. In 1939 the percentage of capacity utilized was 48 percent, in 1944 it was 38 percent, and in 1950 it was estimated at about 86 percent, a new record.

The 1950 reduction in man-hour requirements per unit was attributed largely to a continuation of the trend to shipping in bulk, to plant modernization, and to economies resulting from more intensive use of these more efficient facilites.

The percentage of bulk shipments of portland cement increased from 20 percent of the total amount shipped in 1939 to 42 percent in 1942 but declined to 35 percent in 1943. In 1947 bulk shipments began to increase and by 1949 amounted to about half of the total shipped.

MISCELLANEOUS

Again in 1951 the volume of cement consumption increased more than the real construction volume, in fact even more than the dollar volume of construction. The only possible explanation is that concrete is being used for an increasing percentage of construction. The output of ready-mixed concrete has been increasing rapidly for many years but this is not an accurate guide as there is no means of determining what percentage replaced other types of construction. We do know, however that in 1950 about 17 percent of the cement produced in this country was used in ready-mixed concrete and that in 1951 this increased to 19 percent. Another guide is the demand for concrete building units which has increased by leaps and bounds, taking more and more business away from lumber, clay products and steel. Like cement the output of concrete building units has increased much more rapidly than the real construction volume.

This photograph, taken in October, 1951, shows storage silos and other parts of the new Lehigh Portland Cement Company plant under construction near Flagler Beach, Fla.

CANADA

Apparently 1951 was another record year for the cement industry in Canada. Demand again exceeded production in spite of the tremendous expansion of plant capacity since the end of World War II. No official production figures are yet available but output undoubtedly considerably exceeded the 1950 record output of 16,723,807 bbls. (Canadian), produced and the record shipments of 16,741,826 bbls. Imports are believed to be down from the 1,386,219-bbl. volume of 1950.

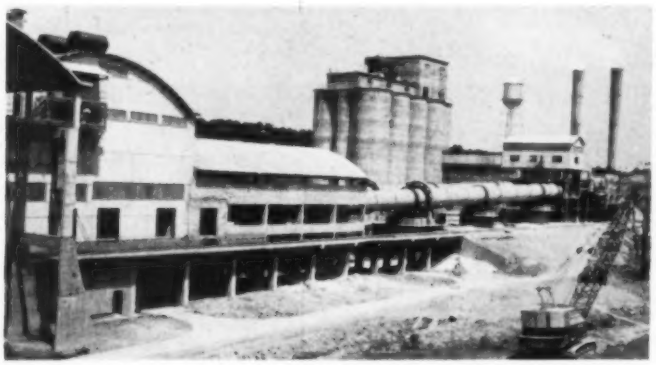
An even bigger year is expected in 1952 by Canadian producers. The rearmament program continues to have its effect and the country-wide industrial expansion continues unabated. With the completion of the present impressive expansion program of the Canadian cement industry there seems to be a possibility of overproduction for a short period after 1952 but it is felt that the starting of the St. Lawrence Seaway and other major projects and continued industrial expansion would soon absorb this increased production.

The industry's expansion program has been slowed down somewhat by material shortages, especially steel and some types of electrical equipment, but these problems are being overcome. There seems to have been little change in retail cement prices during the year. A growing trend toward truck shipments is reported.

No new plants were built in Canada in 1951 but the Havelock, New Brunswick, plant of the Canada Cement Co. began producing clinker in December, 1951, and is scheduled to be in full operation early in 1952. This is a one-kiln, dry-process operation with a capacity of 800,000 Canadian bbls. annually. It is part of the latest expansion program of this company which will increase its productive capacity by 3,200,000 bbls. before the end of 1952 at a cost of over $17,000,000. This program includes new kilns at the Exshaw, Alberta, and Belleville, Ont., plants. The British Columbia Cement Co. Ltd. is installing a new kiln and other equipment in its plant at Bamberton, B. C., and a similar program is scheduled for 1952 completion at the St. Mary's Ont., plant of the St. Mary's Cement Co., Ltd.

The new plant and the expansion of the four other plants mentioned above will put five additional kilns in production. The industry's capacity will be increased 14,000 bbls. daily or about 5,000,000 bbls. annually by the end of 1952, an increase of about 30 percent.

There are rumors that the Newfoundland Government is proceeding with the construction of a new plant near Corner Brook, Newfoundland, but there is no confirmation. This plant is part of a government industrial development program. Equipment is being supplied by the German firm of Miag Ltd. A Swiss-owned company, the Atlas Realties Co., is reported to have purchased land near Villeneuve, Quebec, and to be planning a $5,000,000 cement plant there.



General view of the new Lone Star Cement Corporation plant at Lone Star, Va., which added 4,000 bbl. daily to the capacity of the industry.

Alpha The Alpha Portland Cement Company early in 1951 announced plans to build a new $3,000,000 plant at Jamesville, N. Y. which would double the capacity of the old 1200-bbl. per day plant there. The MacDonald Engineering Co. was awarded a contract for the construction project. The wet process will be used. The plant will have an 11- by 375-ft. Allis-Chalmers kiln, a conventional covered clinker storage area, and 8- by 40-ft. Compeb mills in both the raw material and clinker-grinding departments. The present cement silo storage and packing facilities will be retained. The original schedule called for completion of this plant early in 1952 and construction is reported to be progressing satisfactorily.

A $750,000 expansion program is also reported to be under way at the Ironton, Ohio plant of Alpha and this is expected to be completed early in the year. This project includes the erection of new cement storage silos, a new packhouse and new bag storage houses. The new silos will hold a month's production of the plant, permitting operations the year around if desired.

Ash Grove The Ash Grove Lime and Portland Cement Company reports no cement plant changes but recently was reported to have received DPA approval for a $3,322,700 expansion of its Louisville, Nebr. plant for the manufacture of carbon black, a synthetic rubber ingredient.

Arizona The Arizona Portland Cement Company, a wholly-owned subsidiary of the California Portland Cement Co., early in 1950 put in operation a new 2,000-bbl. capacity dry process plant at Rillito, Ariz. The installation of a second kiln and other equipment to double the capacity of this plant is near completion.

Bessemer The Bessemer Limestone and Cement Co., which in 1950 improved its plant at Walford Station, Pa. by the installation of three Bradley Hercules preliminary grinding mills in the finish-grinding department, is installing three 14-ft. Raymond separators, each to be operated in closed circuit with a 7- by 26-ft. Compeb mill. These new installations are expected to increase 1952 capacity by 10 percent over 1951 and 33 percent over 1946. Some of the production gain in 1951 is also attributed to the increased production of portland blast furnace slag cement, and production of this cement will be further increased in 1952. In its production a mixture of portland cement clinker is ground with blast furnace slag. Experience with this product in 1951 proved to be highly satisfactory.

The company is now erecting a 500W 12 cu. yd. Bucyrus-Erie dragline to be used for stripping overburden in the quarry and to supplement two tower excavators now at work there. This installation was made necessary by the increasing depth of the overburden.

British Columbia The discovery of a 4,000,000-ton deposit of limestone near the present quarry led the British Columbia Cement Co. to undertake a $2,000,000 expansion program at its plant at Bamberton, B. C. which will increase its capacity from 1,350,000 bbl. to 2,000,000 bbl. annually. The new equipment being installed includes a 10-ft. 6-in. by 350-ft. Vickers kiln, new grinding mills, additional clinker storage facilities, slurry mixers, crushers, coolers, etc. Completion of this program is expected about the middle of 1952.

Calaveras The Calaveras Cement Company has since the war carried on an almost continuous program of improvement and expansion at its San Andreas, Calif. plant. In 1951 new raw and finish mills were installed and four new slurry silos and four new cement storage silos were erected by the Rust Engineering Co. The latter have a capacity of 75,000 bbls. Early in the year a certificate of necessity was obtained from NPA for further extensions to cost $2,235,000. Improvements have now begun which will increase the capacity of this plant by 1,100,000 bbls. annually to a total capacity of 3,000,000 bbls. The first of three new 9- by 9-ft. preliminator ball mills arrived late in the year and footings for the new 11-ft. 3-in. by 360-ft. Allis-Chalmers kiln and a 4-ft. 6-in. by 85-ft. air-quenching cooler have been poured.

Canada Cement The Canada Cement Company in 1950 did comparatively little to its seven producing plants in various parts of Canada after completing a huge postwar expansion and improvement program in 1949. Early in 1951, however, the company started out on a new and perhaps even larger expansion program calling for the expenditure of $17,000,000 which will increase the company's total productive capacity from 14,000,000 to 17,200,000 bbls. annually. The first step in this program was the commencement of construction on a new cement plant at Havelock, New Brunswick, which began producing clinker in December, 1951. This dry-process plant has a capacity of 800,000 bbls. annually and has one 10- by 380-ft. kiln.

At its Exshaw, Alberta plant the company is installing a third and larger wet-process kiln which is 11-ft. 3-in. in diameter by 430-ft. long. Other major changes include a new crushing and raw grinding department and a new clinker mill. Production will be increased from 1,600,000 to 2,800,000 Canadian bbls. annually. In August of 1951 this plant was converted from coal to natural gas fuel for burning.

At the Belleville, Ontario plant a 11-ft. 3-in. by 430-ft. kiln is being installed to supplement the two 455-ft. Smidth Unax kilns now in operation and this work is expected to be completed in the late summer of 1952. This installation will increase the capacity of this plant from 2,600,000 to 3,800,000 Canadian bbls. annually.

Carolina Giant The Carolina Giant Cement Company, Harleyville, S. C., which converted a war-time alumina plant to cement manufacture in 1949, is carrying on a $4,500,000 expansion program which will add about a million barrels to the plant's present 800,000 bbl. capacity. This company is a subsidiary of the Giant Portland Cement Co. which has a plant at Egypt, Pa. It is expected that a large part of this additional output will be used in atomic energy and other defense projects.

Consolidated The Consolidated Cement Corp. is reported to have completed a rehabilitation program at its Fredonia, Kans. plant. Late in the year a new quarry was opened at Paulding, Ohio, to supply limestone for its plant at Cement City, Mich. About 550,000 tons of overburden were removed. A portable primary crusher, a 1,400-ft. belt conveyor system and loading hoppers have been installed.

Dewey The Dewey Portland Cement Company early in 1951 completed a $1,000,000 expansion program at its Bartlesville, Okla. plant. This included general rehabilitation of the plant, new shipping facilities, new generating equipment, dust collectors, etc. The Crosby Engineering Co. had the contract for this work.

At the Davenport, Iowa plant, where a $2,000,000 expansion program in 1950 increased the capacity to 4,500 bbls. daily, another huge expansion program is now under way. This will include the installation of two 11- by 375-ft. Allis-Chalmers kilns and an air-quenching clinker cooler.

Dragon The Dragon Cement Company, formerly the Lawrence Portland Cement Co., at its Northampton, Pa. plant in 1950 installed the third new 9- by 314-ft. rotary kiln since the war. Each of these replaced two older and smaller kilns which were, however, kept in operation until late in 1951 in order to meet the heavy demand for cement. These kilns are now being dismantled. The three new kilns are equipped with the latest dust-collecting equipment.

Work is progressing on the installation of a new 356-ft. kiln at the Thomaston, Maine plant which will replace the smaller of two kilns now in operation there. This will increase the capacity of this plant from 1,200,000 to 1,800,000 bbls.

Effective November 30, 1951 the Lawrence Portland Cement Co. was merged with the Dragon Cement Co. and will operate under that name.

Federal During 1951 the Federal Portland Cement Company, Inc., Buffalo, N. Y. completed the installation of a new 11- by 375-ft. Allis-Chalmers kiln, together with a cooler, a Babcock & Wilcox direct-firing coal mill, a 225-ft. Rust concrete stack, dust control equipment and additional slurry capacity consisting of an 8- by 29-ft. Allis-Chalmers raw mill. Future expansion plans consist mainly of preliminary grind in the finish mill which is under study and may be undertaken in 1952.

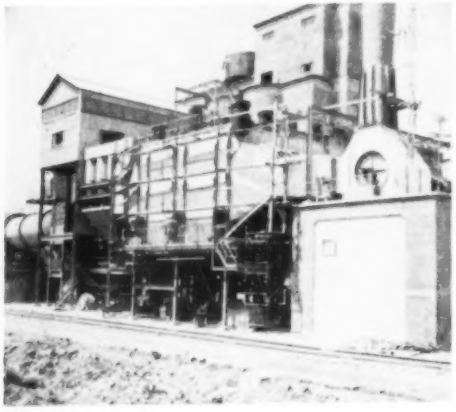
General The General Portland Cement Company which has carried on an extensive expansion and improvement program at its plants in recent years a few months ago announced that it is increasing the capacity of its Tampa, Fla. (Florida Division) plant by 1,300,000 bbls. annually. This program is expected to be completed early in 1952.

Hawaii There have been persistent rumors that a new cement plant was to be built in Hawaii but there has been no verification. These rumors may be based on the fact that the DPA has approved a loan of $4,308,303 for the reconstruction and development of the Hawaiian Cement Co. plant in the Waianae area. During World War I cement was made at Paia, Maui and in World War II this plant was brought to its present location. A deposit has been obtained which would supply the plant's needs for 40 years.

Idaho The Idaho Portland Cement Company has just completed an expansion program at Inkom, Idaho which more than doubled the old capacity of 1,500 bbls. daily. New equipment includes a 300-ft. kiln which is already in operation and supplements the existing 200-ft. kiln., a cooler, a coal mill and a large slurry basin and expanded facilities for sack and bulk loading. Two Compeb mills have also been installed in the raw and finish grinding departments. The Macdonald Enginering Company of San Francisco was the contractor.

Ideal The Ideal Cement Company in September 1951 put in operation its third new plant since the war as the latest step in what is probably the most extensive expansion program ever undertaken by a cement company. The two other new plants were completed in 1949 and were companion operations to existing plants at Portland, Colo. and Devils Slide, Utah. The latest new plant is at Baton Rouge, La. where Ideal took over a wartime alumina plant and added much important new equipment to convert it to cement manufacture. This plant is rated at 1,500,000 bbls. of cement annually. It was this plant from which came some of the kilns and other equipment used in the expansion of other Ideal cement plants. It was remodeled at a cost of over $3,500,000. Raw material for cement manufacture will be brought in by barge and unloaded by a hammerhead crane. Barges will also be used to ship bulk cement to a new $500,000 packing and distributing plant at New Orleans which was completed in June 1951.

In addition to the above the capacity of the Ada, Okla. plant was increased 600,000 bbls. annually at a cost of $1,000,000. Equipment installed included a 10- by 250-ft. Traylor rotary kiln, new finish-grinding equipment, etc. New finish-grinding equipment was also installed at the Superior, Neb. plant. An extensive program is also being carried on at the Trident, Mont. plant but details on this are not available. According to company officials this work pretty well finished up the present program and any further major expansion will wait



Two views of the new Lone Star plant in Virginia, showing (left) the interesting combination of mechanical and electrical dust collectors ahead of the stacks and (right) the two 10- by 340-ft. dry-process kilns.

until a clear picture of the future is possible.

Lehigh The Lehigh Portland Company, which in 1949 completed a $19,000,000 program affecting most of its 13 plants, early in 1951 began the construction of a new $11,000,000 plant near Flagler Beach, Fla. This wet-process plant will use coquina shells and clay as raw materials and will have a capacity of 1,400,000 bbls. annually. It is expected that this plant will be in operation by July, 1952 unless unexpected difficulties arise.

Exclusive of the Florida plant Lehigh spent about $3,000,000 in 1951 for improvement and expansion of its other plants and expects to spend about the same amount on them in 1952. At the Mason City, Iowa plant, which was converted from the wet to the dry process in 1950 and its capacity increased about 660,000 bbls. annually, two additional Babcock & Wilcox coal mills were installed in 1951. Now all four kilns are equipped to burn coal in the winter when natural gas is not available.

At the Metaline Falls, Wash. plant, where a major improvement and expansion program had been completed in 1949, a third tube mill was added to the clinker grinding department, providing excess capacity over clinker production. At Oglesby, Ill. a third Bradley Hercules mill was installed to provide better balance between the preliminary and finish clinker grinding. At Union Bridge, Md. a second Hercules mill was installed in the clinker grinding department for additional overall grinding capacity. The quarry was changed over from rail to truck haulage, as was also the quarry at the Fogelsville, Pa. plant.

At the Lehigh plant in Birmingham, Ala. a new storage for shale, sandstone and iron-bearing material will be erected and new handling and raw material proportioning facilities will be provided. A new shale crushing plant is to be installed at the Buffalo, N. Y. plant. At the Iola, Kansas plant power has been provided by 6 diesel engines. Five of these have been in operation for many years and their use will be discontinued and the equivalent power will be purchased. The erection of a substation and a gradual changeover in the plant from d.c. to a.c. power is being initiated which will be largely accomplished during 1952.

Work to be done at Metaline Falls, Wash. during 1952 includes the construction of 24 new dwellings for the employees. A Western Precipitation Cottrell electrical precipitator and two Multiclone dust collectors will be added to the present system for collecting dust from the kiln gases. Four 1000-kv.-a. transformers are being installed at this plant. A part of this capacity will be used to augment the capacity of the hydro-electric plant and the remainder will be emergency capacity in case of interruptions to water supply and the possible ultimate abandonment of hydro-electric power production.

At Ormrod, Pa. the limestone is to be obtained from a different location than at present and a new crushing plant is being erected. The stone transportation will be by truck, which will eliminate the present long incline and rail haul from the present crusher to the plant storage.

Lone Star The Lone Star Cement Corporation's chief contribution to the capacity of the cement industry in 1951 was its new plant at Lone Star, near Roanoke, Va., which went into operation in June. This is a 2-kiln dry-process plant with a capacity of 4,000 bbls. daily. Near completion at Maryneal, near Sweetwater, Texas is a twin plant differing in only minor details, and this is expected to be in operation soon. Raw grinding is done in the Virginia plant by two 9½- by 15-ft. ball mills in closed circuit with 16-ft. Sturtevant separators and equipped with drying furnaces. There are two Allis-Chalmers 10- by 340-ft. rotary kilns with Fuller 6- by 33-ft. inclined-grate clinker coolers. Clinker grinding is done by three completely separate grinding circuits, each consisting of an Allis-Chalmers 8- by 32-ft. 2-compartment mill in closed circuit with a 16-ft. Sturtevant separator. Each separator in turn is air-cooled through a Norblo dust collector.

An unusual feature of this plant is the separate storage of cement for bulk and bag shipment. The bulk silo structure consists of five 13,000-bbl. silos in line and the structure for packhouse shipments consists of two rows of five 13,000-bbl. silos and their interstices. Of the latter, two silos are used exclusively for masonry cement storage. Another feature of this plant is the complete dust-collection system. There are 18 Norblo and Sly dust collectors strategically located throughout the plant and the two kilns are connected to 6-unit Buell dust collectors followed by Koppers-Elex 2-chamber electrical precipitators.

Marquette The Marquette Cement Manufacturing Company added considerably to the productive capacity of the industry in 1950 but in 1951 completed an even more impressive program, the major item of which was, of course, its new 1,000,000-bbl. plant at Brandon, Miss. Early in June the new kiln and other equipment installed in the Des Moines, Iowa plant went into operation, increasing the capacity of the plant by 50 percent or about 500,000 bbls. The equipment installed at Des Moines in-

The new plant of the Marquette Cement Manufacturing Company at Brandon, Miss., which went into operation recently. This has a capacity of 1,000,000 bbl. annually.

cluded an 11-ft. 3-in. by 464-ft. kiln, a cooler and other related equipment. This kiln was originally built by Allis-Chalmers for the China Portland Cement Co. and part of the shipment did reach Hong Kong before the Reds took over China, the remainder being held in a West Coast port. The China company then sold this equipment to Marquette and it was all shipped to Des Moines and installed there.

Marquette Cement Manufacturing Company's new plant at Brandon, Miss., went into production late in 1951 producing for the southern market the first cement ever made in Mississippi. The 12- by 450-ft. kiln is now turning out cement clinker at its regular production rate of 1,000,000 bbls. annually.

Construction of the new cement plant was undertaken in November, 1950 on a pine-covered tract 12 miles east of Jackson, Miss. Originally scheduled for earlier completion, progress was hampered by the severe Winter weather of 1950-51, by governmental restrictions and allocations, by occasional labor jurisdictional disputes, and by the necessity for quick alteration of certain design details to alleviate rising costs and procurement problems. Production at this early date is therefore considered by Marquette officials to be a major triumph. It was stated that in the event of materially increased demand for cement, the plant could be considerably enlarged at any time to operate efficiently at a higher rate of production.

Medusa The Medusa Portland Cement Company has under way a vast expansion and improvement program affecting each of its seven plants. Some of these were completed in 1951 and others are in various stages of completion. One of the most important of these is the program at the Silica, Ohio plant which will convert it to the wet process and increase its capacity by 500,000 bbls. to 1,700,000 bbls. annually. Completion is expected early in 1952. Being installed are four large slurry blending and storage tanks, a Pennsylvania Impactor in closed circuit with vibrating screens, two new Bradley Hercules mills and a 7- by 22-ft. tube mill in the finish-grinding department, each in closed circuit with a Raymond separator. A Fuller-Kinyon cement transport system has also been installed.

The Manitowoc Portland Cement Co., a subsidiary, has near completion a $2,500,000 expansion program which will increase its capacity 50 percent. Being installed are: a fourth kiln, a 10- by 340-ft. Allis-Chalmers unit; a 4½- by 70 ft. air-quenching clinker cooler; a No. 85 Smidth Kominuter and a 7- by 22-ft. tube mill in the raw department; a Raymond direct-firing coal mill; a third Bradley Hercules mill and a third 7- by 22-ft. tube mill, each with a Raymond separator, in the clinker-grinding department; Buell dust collectors on the kilns; and a new 14- by 300-ft. concrete stack. A crusher and a tube mill were also added for the production of mortar and special cements and the entire electrical system is being expanded to carry the increased load.

At Medusa's Dixon, Ill. plant six 4- by 18-ft. air quenching inclined-grate coolers are being installed and the kilns are being equipped with Allis-Chalmers air-cooled discharge ends. At Bay Bridge a new building was erected for the production of mortar and special cements. The new equipment includes a Raymond high-side roller mill for rock grinding and a 5- by 22-ft. tube mill has been equipped with a 12-ft. Raymond separator.

At the Medusa white cement plant at York, Pa. a second Babcock & Wilcox waste-heat boiler is being installed and the No. 3 kiln is being equipped with a 4-disc Oliver United slurry filter. At the gray cement plant a new Cottrell electrical precipitator is being installed. In the power house which serves both plants a new 4,000-kw. Westinghouse turbine generator is being installed to replace the two existing 1500-kw. machines. Comparatively minor changes are being made to the plant at Wampum, Pa.

Missouri The Missouri Portland Cement Company, which in 1950 built a new 6,000-bbl. wet process plant at Prospect Hill, near St. Louis, Mo., early in 1951 announced plans for the erection of a new 100,000-bbl. per-month plant at Sugar Creek, near Independence, Mo. This plant is part of the modernization and expansion program started shortly after the war and on which $12,000,000 has already been expended. It is to be a thoroughly modern, largely automatic plant. The old plant will be retained and operated but is to be replaced eventually by a duplicate new plant.

Monarch The Monarch Cement Company, Humboldt, Kans., which in 1950 completed a $1,500,000 expansion program including the installation of an 11- by 230-ft. dry process kiln, also started the second phase of its program which was completed late in 1951. This included the installation of another kiln, an air-quenching clinker cooler, a waste heat boiler, a coal pulverizer, dust collectors, etc.

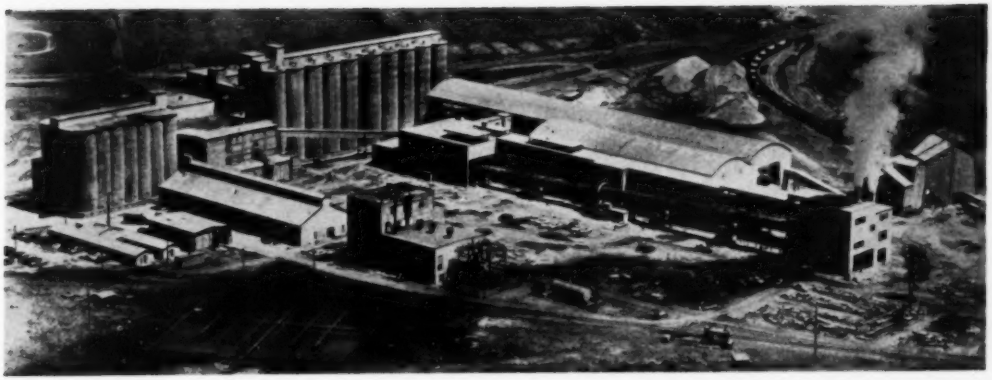
Monolith The Monolith Portland Cement Company produced 3,000,000 bbls. of cement in 1951 at its plant at Monolith, Calif. Its facilities will be considerably expanded in 1952, it is reported.

Northwestern States The Northwestern States Portland Cement Company, which in 1950 completed an extensive improvement program at its Mason City, Iowa plant, made several further improvements in 1951. These included the installation of Multiclone dust collectors, air separators in the raw end, and the rehabilitation of the power plant. Capacity was increased very little by either of the above programs and there are no plans for future increase of capacity.

Oregon The Orgeon Portland Cement Company, which increased the capacity of its plant at Oswego, Ore. in 1947 and 1950, increased the clinker producing capacity of its plant at Lime, Ore. by 100,000 bbls. annually in 1951. The company has applied for a Certificate of Necessity for the further expansion of its facilities.

Pacific According to reports the Ideal Cement Company may take over the properties of the Pacific Portland Cement Co. through a reorganization plan involving exchange of stock between the two companies. If this deal goes through it is reported that Ideal will improve and expand two of the three Pacific plants at a total cost of at least $6,500,000. Expansion of the Redwood City, Calif. plant would cost about $3,500,000 and $3,000,000 would be spent on the Gold Hill, Ore. plant. No changes are announced for the San Juan Bautista, Calif. plant.

Peerless The Peerless Portland Cement Company in 1951 completed the installation of a new 11- by 400-ft. kiln complete with direct-firing coal mill, Fuller clinker cooler, concrete stack and the necessary dust-collecting equipment at its Port Huron, Mich. plant. Additions were also made to the raw grinding capacity to provide for this kiln. These additions doubled the capacity of this plant. Late in



• This aerial view, taken May 24, 1951, shows the enlarged production facilities, including the new 475-ft. kiln, which went into operation early in June at the Des Moines, Ia., plant of Marquette Cement Manufacturing Company.

the year the company initiated the transportation of clinker by water from the Port Huron plant to the Detroit plant for conversion into finished cement.

Penn-Dixie The Pennsylvania-Dixie Cement Corporation's major project during the past year was the conversion of its Kingsport, Tennessee plant from dry to wet process. Construction and alterations were started in August, 1950 and the change was primarily influenced by a dust ordinance invoked by the city of Kingsport inasmuch as the plant is located within the western limits of the city. Plans were made accordingly to obtain the utmost efficiency in collection of dust from exit gases of the kiln and led to the selection of a 12- by 500-ft. kiln with a combination of Multiclone and Cottrell treaters, at the same time with the decision to use the wet process. A number of factors prevailed in favor of the transition from a dry to a wet plant with important advantages in favor of dust collection efficiency from the kiln and with regard to certain local conditions and characteristics of raw materials. The new kiln was put in operation during the past summer.

The entire construction program was planned for execution without interruption of the old plant excepting for an interruption of about thirty days. F. L. Smidth & Co. of New York were designing engineers and furnished the principal equipment. Installation of Allis-Chalmers preliminators proceeded in the raw mill, with erection of a catenary slurry trough for the tube mills and two additional tube mills, during the operation of this department until the time arrived for the final changeover.

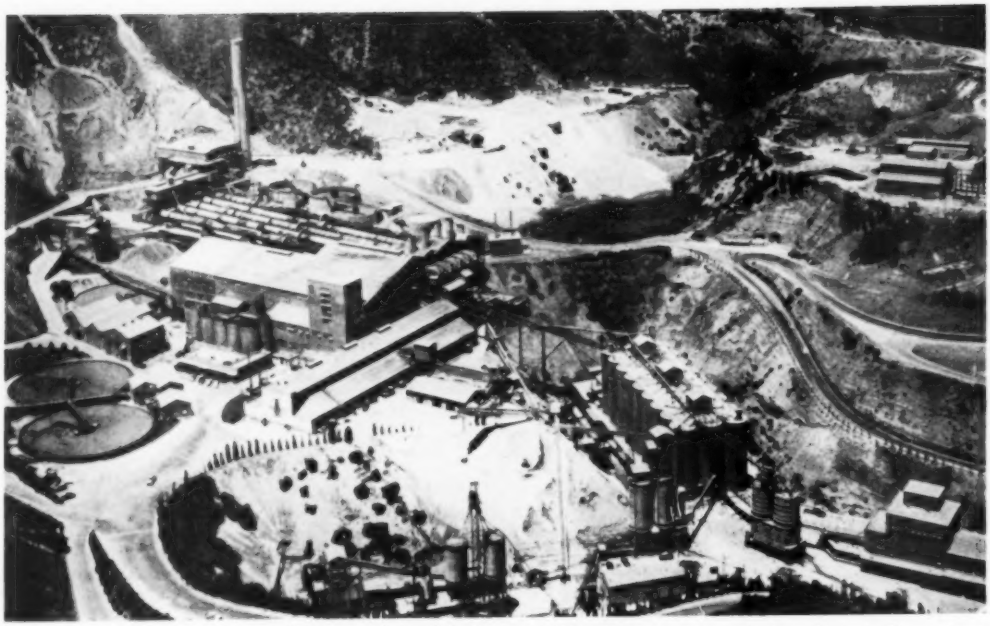
The project included the erection of concrete correcting tanks for slurry and feed basins. As a part of the rehabilitation program, four 10,000-barrel clinker silos have been provided and an 800-ton gypsum bin. These silos have conical bottoms and are provided with Waytrols for proportioning clinker and gypsum to the feed belt underneath. A complete Sly dust collector installation has been made in the finish mill. Coal is used for fuel and the grinding is done through an air-swept Tyrex coal mill 28 ft. 3 in. in length with 6 ft. 6 in. outside diameter.

The entire installation is of the most modern design and the layout has been carefully integrated into a complete program of modernization to follow in other departments of the plant.

In addition to the cement plant improvements, the company has also added equipment to its modern masonry cement plant consisting of an unloading tipple for limestone, pan conveyor and hammer mill for reduction of the stone which is pulverized in a new six-roll Raymond mill in preparation for final grinding in a tube mill.

Improvements contemplated during 1952 are a new limestone storage with an overhead crane and proportioning facilities for raw materials, also a new shale crushing plant.

A continuing construction program has been in progress at the West Winfield plant of the company which was formerly the West Penn Cement Company, acquired in 1949. The plant in general has been brought up to good maintenance standards with rehabilitation of all departments. There are two kilns at this plant; one is 11 ft. 6 in. by 15 ft. by 250 ft. in length. while the other is 11 ft. 6 in. throughout its length, also 250 ft. long. Wet process is used. In 1949, Penn-Dixie completely rebuilt the rear end housings of these kilns and also provided a concrete stack to replace the stub stacks that had originally been used. Other notable improvements have followed. A new office and laboratory building of pre-fabricated beam construction, two stories, with concrete block panels and completely air-conditioned, furnishes modern quarters for the office and complete physical and chemical laboratory facilities. Extensive mine improvements have been made with a number of additions to the equipment. During 1951, the company completed a new addition to the crusher department consisting of a Pennsylvania Impactor and Ty-Rock double-deck screens for closed circuiting the product going to the raw mill. Transportation of rock between the crushing department and the mill had previously depended upon shifting standard-gauge hopper cars from the loading point to the mill hopper. A belt conveyor system 1100 ft. long now conveys the crushed rock, shale and sandstone, to a battery of concrete silos constituting a reservoir of approximately 20,000 tons of raw material. All of the limestone silos are provided with feed tables at the base of the conical bottoms but with Waytrols for proportioning shale and sandstone on these respective silos. As a part of the same battery of concrete silos, three units are given over to storage of clinker and inter-connected separately with conveyors and elevators. A new building has been erected to house a cement cooler installation and new service buildings have added very greatly to the general



Aerial view of the Permanente Cement Company's plant at Permanente, Calif., showing the fifth kiln, which was installed in 1951. This plant now has a capacity of 7,000,000 bbl. annually, making it again a contender for the title of "world's largest cement plant".

appearance and efficiency of the plant. These include a carpenter and electrical repair shop, foreman's office and bath house and a new weigh station for trucks. The use of truck transportation for cement shipments was broadened by Penn-Dixie and a fleet of new tractor-trailer units was acquired and has been operating for the past two years. These units consist of White tractors with Gramm tank-truck trailers equipped with Fuller-Huron Airslides for unloading. New buildings were erected for servicing these trucks and for garage purposes. During the past two years, there has also been put into operation a new municipal disposing plant to serve the needs of the mill and eventually for the village of West Winfield which is company-owned.

Included in the program completed during 1951, at this plant, is a separate department for manufacture of high-early and masonry cement. Construction work was performed by the Rust Engineering Co. and Trimble Co. of Pittsburgh, Pa.

The 1952 program at this plant, for which preparations are well advanced, include the replacement of 85 lineal feet of kiln section on each of the two kilns. This replacement will provide two kilns of uniform dimensions; that is to say, with 15 ft. calcining zones on each. The old bin system for fuel grinding will be abandoned and replaced with Raymond unit coal pulverizers. Rotary coolers under the kilns will be replaced with Narsted grate coolers.

Loading facilities for bulk cement trucks will be completed in 1952 so that the loading area at the packhouse will no longer be used for this purpose and the handling of tank trucks will be greatly expedited through the use of a central loading station. This will consist of four storage compartments taking cement from two 8-in. transport lines from Fuller-Kinyon pumps under the silos. Each storage pocket or bin will be provided with a pre-weigh scale arranged for simultaneous loading of four tankers.

Miscellaneous additions have been made at other plants of the corporation. At the West Des Moines plant, grinding capacity has been increased both in the raw and finish departments, in each case, through an additional kominuter and tube mill. In the Lehigh Valley, a new cement cooler has been put into operation at Bath, Pa., and the installation of a third Hercules mill for clinker grinding has just been completed at Penn-Dixie's Nazareth plant. Additional facilities for manufacture of high early cement have also been added in the Lehigh Valley.

Permanente The Permanente Cement Company in 1951 again considerably expanded not only its plant at Permanente, Calif., but also its already wide distribution facilities. A new kiln, the fifth, went into operation, increasing the capacity of this plant 1,400,000 bbls. to 7,000,000 bbls., making it again a contender for the title of "world's largest cement plant." During the year the company also purchased from the Santa Cruz Portland Cement Company the 40,000-bbl. cement self-unloading ship, the "Santacruzcement" and distribution plants at Portland, Ore. and Long Beach, Calif. The first two had been operated for some time under lease. Storage and distribution facilities at Anchorage and Fairbanks, Alaska were also completed and the capacity of the distributing plant at Seattle, Wash. was increased by one-third. That this company has further expansion plans in mind is apparent from the fact that it was recently granted a certificate of necessity by DPA for the expenditure of $3,422,000 for plant expansion.

Pittsburgh Coke The Pittsburgh Coke & Chemical Company, Neville Island, Pa., is installing additional facilities for the loading of cement into bulk trucks because of the growing trend toward truck shipments in the Pittsburgh area. It is planned to install clinker crushers and preliminary grinding mills in the finish-grinding department and these are expected to increase output by 300,000 bbls. annually.

(*Continued on page* 164)

Output At Record Level Last Year

Crushed Stone, Sand & Gravel, Slag and Lightweight Materials All Scored Gains

By WILLIAM M. AVERY

SURVEY questionnaires filled out by representative producers of sand and gravel and crushed stone during the closing weeks of 1951 indicate that the output of both industries attained new peaks for the year. For the first 10 months of the year sand and gravel producers reported a 6 per cent increase in output over the corresponding period of 1950, and crushed stone production was up approximately 13 percent. These findings, based on samples representing about 7 percent of the capacity of the two industries, indicate that total production for the year amounted to approximately 392,000,000 tons in the case of sand and gravel, and to some 283,000,000 tons in the case of crushed stone.

CRUSHED STONE

According to figures released late in 1951 by the Bureau of Mines, the output of crushed and broken stone in 1950 totaled 250,253,850 short tons valued at $332,117,914, an increase of 13 percent in tonnage and 15 percent in value from the preceding year. This total includes all major use classifications except stone used in the manufacture of open-market lime and cement, asphaltic stone, and slate used for granules and flour.

Stone used for portland and natural cement and cement rock totaled 59,361,000 tons in 1950, compared with 55,219,000 tons in 1949—an increase of 7½ percent. Stone used for lime amounted to 14,980,000 tons, an increase of 18½ percent over the 12,637,000 tons quarried for that purpose in 1949. These quantities brought the grand total of production for 1950 to 324,594,850 tons, almost 12 percent more than the comparable 290,264,140-ton figure for 1949.

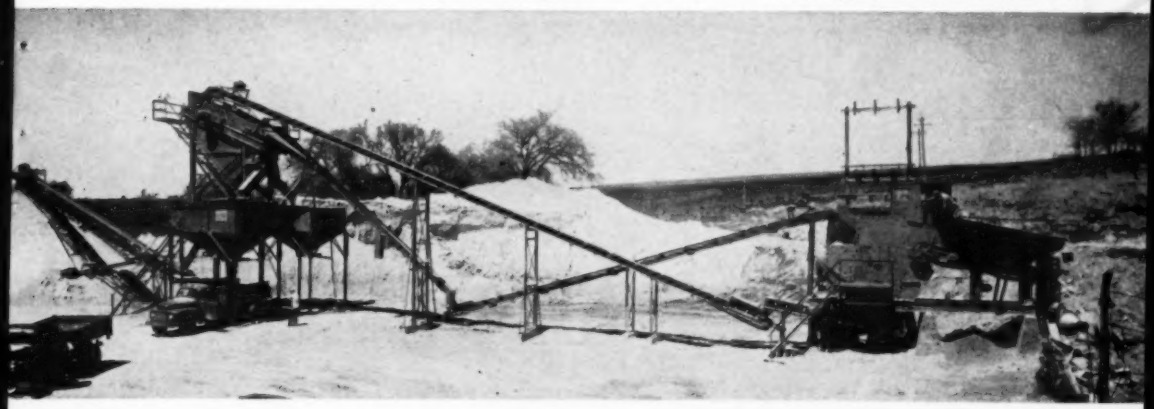
Major Uses Concrete aggregate and railroad ballast accounted for 66 percent, or 165,721,710 tons, of the total output in 1950, and quantity and value showed increases of 17 and 21 percent respectively over 1949. Eighty-nine percent of the 147,107,670 tons of stone used for concrete aggregate was produced by commercial operators, with government agencies accounting for the remainder.

Metallurgical uses, which were up 17 percent in quantity and 18 percent in value compared with 1949, took 14 percent of the total output in 1950. This second largest use category accounted for 35,969,820 tons of production, a gain of 5,217,500 tons over the preceding year. The total value of $37,932,388 represented an average of $1.05 per ton.

Only one major category showed a significant drop. Limestone used for agricultural purposes totaled 19,348,820 tons compared with 21,482,910 in 1949, and total value dropped from $33,251,141 to $30,393,075. These figures represent decreases of 10 and 9 percent respectively in quantity and value.

In 1950 limestone, including dolomite, constituted 72 percent of all crushed and broken stone sold or used in the United States. Of the total (180,111,320 tons valued at $234,951,442), 96,966,590 tons consisted of concrete aggregate and road metal—an increase of almost 12,000,000 tons over 1949. Fluxing stone, which accounted for 35,969,820 tons, ranked second, and agricultural limestone ran a poor third. Railroad ballast totaled 7,585,570 tons.

Production By States Pennsylvania as usual led the states in production with a total output of 25,493,230 tons valued at $42,205,691, an increase from 1949



• New plants, such as this fine installation by Dillon, Sharpe & Co., were an important factor in the crushed stone industry's record production last year.

of about 20 percent in quantity and 21 percent in value. Ohio, with an output of 20,466,350 tons valued at $28,628,678, held the No. 2 spot in 1950 as it did in 1949. Quantity and value were up 6 and 4 percent respectively.

Michigan moved into third place with a total production of 19,095,540 tons valued at $15,391,366. Illinois, which held third place in the Bureau of Mines report for 1949, dropped to fourth place in 1950. Output amounted to 17,911,480 tons valued at $21,970,537, compared with 17,054,110 tons valued at $20,682,162 in 1949.

Others among the first 10 states in respect to production were New York, in fifth place with 13,121,850 tons; California, in sixth place with 11,764,630 tons; Missouri, in seventh place with 10,300,400 tons; Virginia, in eighth place with 9,272,740 tons; Iowa, in ninth place with 8,425,490 tons, and Tennessee, which ranked tenth with 7,978,590 tons.

Only seven states (Alabama, Arizona, Colorado, Idaho, Nevada, Oregon, and Wisconsin) reported less production in 1950 than in 1949. Among the states which produced more than 5,000,000 tons of stone, the largest increases were reported by Georgia (47 percent), Kansas (27 percent), Iowa and Virginia (both 23 percent), Pennsylvania (20 percent), and Michigan (15 percent). Limestone was quarried in all but three states.

Transportation In 1950 truck transportation accounted for 54 percent of the total stone sold by commercial and noncommercial operations. Thirty-one percent of the tonnage moved by rail, 10 percent waterway, and 5 percent was unspecified.

SAND AND GRAVEL

As reported to the Bureau of Mines, sand and gravel sold or used by producers in the United States in 1950 totaled 370,455,000 short tons valued at $295,040,000. Of this total, commercial operations accounted for 257,556,631 tons and noncommercial operations for 112,899,000 tons. Gravel, including railroad ballast, accounted for 231,555,000 tons, and sand for 138,900,000 tons.

Major Uses Paving work took 62,755,788 tons, or about 47½ percent, of the total commercial gravel sold or used, an increase of about 3½ percent over 1949. Building ran second with 57,093,484 tons and railroad ballast third with 9,451,187. These amounts represented an increase of about 15 percent in building use, and a drop of 10 percent in railroad ballast. Average values in these three categories ran $1.01, $0.89, and $0.56 per ton respectively.

Commercial sand use was broken down as follows: building up 14 percent to 67,809,295 tons valued at $55,862,325; paving up 16 percent to 36,562,509 tons valued at $29,406,951; molding up about 33 percent to 8,139,804 tons valued at $13,667,697; and glass up 19 percent to 5,149,656 tons valued at $12,815,511.

In government-and-contractor operations, paving accounted for 93,765,000 tons valued at $43,245,000 in the case of gravel, and 11,159,000 tons valued at $4,286,000 in the case of sand. Building accounted for 5,216,000 tons of gravel valued at $4,510,000 and 2,759,000 tons of sand valued at $1,675,000.

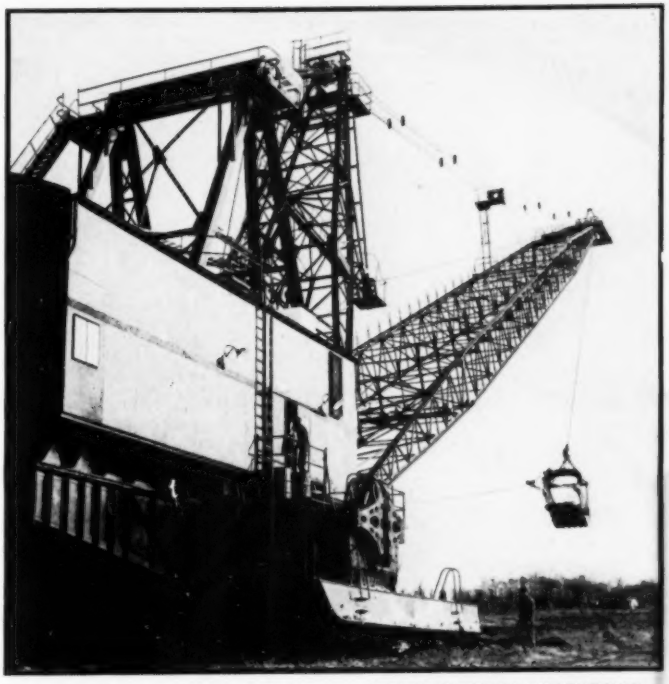
Production By States California producers, who sold or used 41,894,039 tons of sand and gravel in 1950, led all the states by a wide margin. The runner-up was Michigan, with 24,556,911 tons. Others in the first ten were as follows: New York, 21,778,089 tons; Wisconsin, 19,117,115 tons; Illinois, 18,695,433 tons; Texas, 17,972,105 tons; Ohio, 15,664,175 tons; Minnesota, 15,472,815 tons; Pennsylvania, 13,858,154 tons; and Washington, 10,605,791 tons.

The same states ranked among the first ten in 1949, and the only position change in 1950 was Wisconsin's moveup from 5th to 4th place, displacing Illinois. Three states among the first ten (Michigan, Minnesota, and Texas) each showed approximately 20 percent increase in sales in 1950. Pennsylvania followed very close with 19 percent, and New York showed about 17 percent.

BLAST FURNACE SLAG

It seems virtually certain that the output of iron blast-furnace slag set a new record in 1951, as it did in 1950. Confirming statistical data will not be available, however, for several months. Based on a canvass conducted by the National Slag Association, the industry's 1950 out-

• 1951 was the first full year of production for this well-designed plant of Utah Sand & Gravel Products Co. at Salt Lake City.



• One of the world's largest earth moving machines, this 10-cu. yd. walking dragline was placed in operation early last year at the Hillsville, Pa., quarry of Carbon Limestone Co.

put was 24,926,033 short tons valued at $29,480,858. Of this total 20,047,844 tons consisted of screened air-cooled slag, an increase of 13 percent from 1949. The production of unscreened air-cooled slag (1,005,436 tons), granulated slag (2,168,365 tons, and expanded slag (1,704,388 tons), also increased substantially in 1950. Almost the entire output of expanded slag was used as aggregate in the manufacture of concrete masonry units. About half of the granulated slag was used in the manufacture of hydraulic cement.

In 1950, as in 1949, Ohio was the largest single producer of air-cooled slag. Sizable quantities of the material also came from the steel centers of Pennsylvania, Alabama and Illinois.

LIGHTWEIGHT AGGREGATES

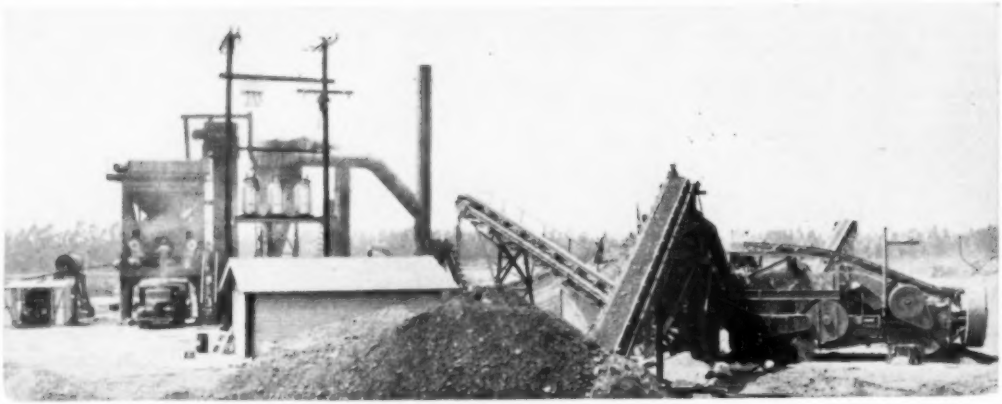
The lightweight aggregate industries have never been covered on a statistical basis, and the performance of the largest single consumer, the concrete masonry unit industry, is still the best available indication of production. This publication's survey of 1951 block production, which is reported in detail elsewhere in this issue, indicates that lightweight units accounted for 52 percent of total block production, or approximately 866,500,000 8-in. equivalents. Based on an average yield of 50 units per cu. yd. of lightweight aggregate, it appears that the block industry alone consumed about 17,350,000 cu. yd. of all types of lightweight aggregate—an increase of almost 29 percent over the estimated 13,400,000 cu. yd. consumed in 1950.

There was also a substantial increase in the use of lightweight aggregates in other precast products, as well as in ready-mixed concrete and plaster. Thus the total consumption of lightweight aggregates for the year just ended was in all probability not less than 24,000,000 cu. yd., or about a third more than the 18,000,000 tons which we estimated for 1950.

AGRICULTURAL LIMESTONE

Based on information assembled from various sources, including the United States Department of Agriculture, state departments of agriculture, county agents and individual producers, the total use of agricultural liming material in the United States in 1950 amounted to 29,842,145 tons. This represented an increase of about 7 percent over the 27,901,969 tons used in 1949.

The eight ranking states in respect



• The Robert J. Noble plant installation near Olive, Calif., crushes and screens aggregates to supply a modern hot-mix asphalt plant.

to tonnage used in 1950 were Illinois (4,985,397 tons), Missouri (3,701,463 tons), Iowa, (3,502,516 tons), Indiana (2,856,342 tons), Ohio (2,204,173 tons), Wisconsin (2,075,626 tons), Pennsylvania (1,319,314 tons), and Kentucky (1,197,276 tons). These eight states used 21,842,107 tons, or a little over 73 percent of the total.

It is believed that the total use of agricultural liming material in 1951 may have increased approximately 1,000,000 tons over 1950, and present indications are that 1952 will run at about the same level of approximately 31,000,000 tons. The shortage of fertilizers in general, and superphosphate in particular may result in some increased tonnage, since these materials in a large section of the country normally compete with agricultural limestone for the farmer's Agricultural Conservation Program dollar.

GENERAL OUTLOOK

This publication's 1951 production questionnaire asked each aggregate producer to appraise his own company's prospects in the new year; *i.e.* to indicate the approximate percentage by which he expected total volume to rise or fall by the end of the year. Thirty-nine percent of all the companies that supplied such information expect sales in 1952 to be at about the same level as in 1951, and a surprising 41 percent predicted increases averaging close to 15 percent. The remaining 20 percent look for reductions in total business, and their predictions on the debit side also averaged about 15 percent. All the replies, when properly weighed, suggest a net increase of about 3 percent in total volume for 1952.

On a sectional basis the predictions ran as follows. Midwest: no change 45 percent, increase 35 percent, decrease 20 percent; East: no change 43 percent, increase 38 percent, decrease 19 percent; West: no change 45 percent, increase 28 percent, decrease 27 percent; South: no change 39 percent, increase 43 percent, decrease 38 percent.

The questionnaire also asked producers to indicate whether or not they planned to increase plant capacity during 1952. Over 30 percent of all the replies to this question were affirmative, and the average planned expansion as reported amounted to about 18 percent of existing capacity.

• The new 150-cu. yd. per hour dredge-recovery sand and gravel plant of Consumers Co. at Lacon, Ill.

Output in 1951 Generally Gained

Lime, phosphate, gypsum set new all-time production records.

JUDGING from the fragmentary information available at this time, the year 1951 was a very good one for most producers of nonmetallic minerals (exclusive of cement and aggregates), probably exceeding 1950 by a considerable margin and perhaps even exceeding 1948, when many of them set all-time production records. Partial information for 1951 is available on only six industries, and these all showed increases ranging from 2 to 20 percent over 1950. Three of these industries set new all-time records, these being lime, phosphate, and gypsum. The other three known to have shown increases over 1950 are phosphate, bauxite, and fluorspar.

Production statistics on the cement, sand-gravel, crushed stone, slag and lightweight aggregate industries, which also did very well, are reported elsewhere in this issue.

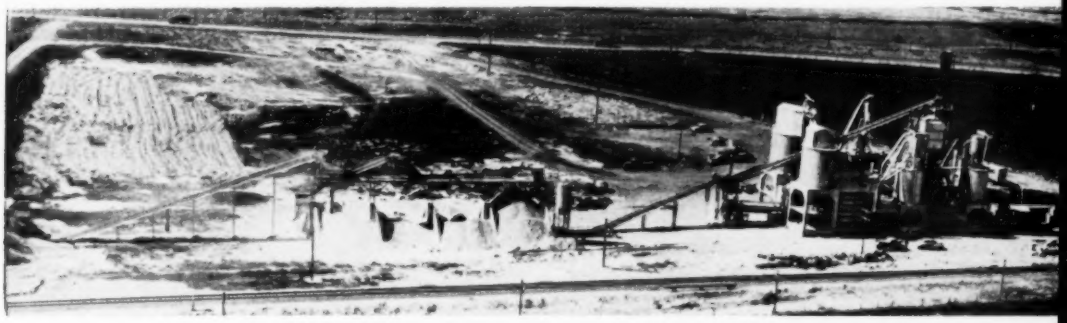
Complete information is not yet available on 1950 production in all these industries, but it is safe to say that together they showed a tremendous increase over 1949 and that most of them set new production records. Those industries known to have increased production over 1949 for new records are: lime, 18 percent; sulphur, 7 percent; phosphate, 19 percent; roofing granules, 33 percent; boron minerals, 38 percent; fuller's earth, 23 percent; bentonite, 12 percent; ball clay, 30 percent; kaolin, 24 percent; potash, 9 percent; salt, 6 percent. Industries which also showed increases over 1949 but in most cases did not set new records are: gypsum, 15 percent; fluorspar, 20 percent; feldspar, 10 percent; fire clay, 11 percent; tripoli, 71 percent; quartz, 49 percent; pumice and pumicite, 0.5 percent; ground sand and sandstone, 23 per cent; talc, pyrophyllite and soapstone, 32 percent.

Lime Preliminary figures from the U. S. Bureau of Mines show that total lime production in 1950 was 7,748,416 short tons, valued at $83,247,990, an increase of 18 percent over 1949 output and a new record. The production of quicklime was 5,593,315 tons, valued at $59,126,427, an increase of 21 percent in output. The hydrated lime production totaled 1,885,101 tons, valued at $24,121,563, an increase of 11 per cent. Production of lime for each of the three major uses was up—agricultural, by 1 percent; building, by 19 percent; and chemical and industrial, by 14 percent. The only loss was shown by agricultural quicklime, wich was down 7 percent. Agricultural hydrate was up 6 percent; building quicklme and hydrate were up 26 and 17 percent, respectively, and chemical and industrial quicklime and hydrate were up 16 and 6 percent, respectively.

The above figures include lime used by producers (captive tonnage): 456,191 tons, valued at $3,977,905; and refractory or deadburned dolomite totaling 1,759,443 tons, valued at $21,725,560, an increase of 33 percent in output. Sales values given are f.o.b. plant, excluding cost of container.

It seems certain that the total output of lime set another new record in 1951 on the basis of partial figures now available. The National Lime Association gets monthly reports on production from about 60 percent of its membership, which represents the bulk of production in the industry. While these reports cannot be used to arrive at accurate figures for the actual output of the entire industry, they do show that production in 1951 was substantially ahead of 1950 in the first eight months of the year, perhaps by as much as 10 percent. This indicates a total output for 1951 of over 8,000,000 tons.

Sulphur Sulphur production in the United States in 1951 undoubtedly set a new record of about 5,300,000 long tons, about 2 percent over the 1950 record output of 5,192,184 tons. Official figures through October, 1951, show a total production of 4,423,766 tons, 2 percent over the same ten months of 1950. It is safe to assume that



Aerial view of Limestone Products Company's modern plant at Cleburne, Tex.

• Much of the lime industry's increased output is attributable to new capacity, such as this 9- by 160-ft. rotary kiln installed at Delaware, O., by Scioto Lime & Stone Co.

the same percentage held for the balance of the year, as the bulk of the production is in the warmer climates and underground, so that it is affected only slightly by seasonal changes.

Mine shipments for the first ten months of 1951 and apparent sales were both down about 7 percent from the same period in 1950. This verifies the recent survey made by the Bureau of Mines which listed sulphur as one of the nine mineral commodities which this country produces in surplus quantity.

The world-wide demand for sulphur remains far above the supply. It has been listed as one of the critical minerals and has been placed under allocation. Sulphur producers have been given government assistance in prospecting for new reserves, and tax amortization has geen granted to expand existing facilities. In addition, some pyrite mines have been reopened and some industries have started programs for the recovery of sulphur from waste gases. These programs will help in certain instances, but the bulk of sulphur production (88 percent) still depends on the elemental domes in the Gulf region. The discovery of four new domes during the year is expected to increase the production of sulphur in the next two years, although the gains will be somewhat offset by the declining production in some of the older domes, which are now past their peak of production. Altogether the outlook for sulphur is exceedingly good for the next two years or more. One large producer expects U. S. production of sulphur to reach 6,555,000 tons by the end of 1953.

Gypsum The volume of gypsum production in 1951 is not yet known, but on the basis of quarterly reports by the Bureau of Mines, we estimate an increase of 10 to 20 percent over the 1950 record mine production of 8,119,126 short tons. In the first three months of 1951 mine output was 2,102,006 tons, 28 percent over the first quarter of 1950. In the second quarter of 1951 the domestic mine output was 2,305,307 tons, 20 percent over the comparable 1950 figure. New records were also set in every major classification of gypsum and gypsum products. Calcined gypsum was up 17 and 12 percent, respectively, in the first and second quarters of 1951; cement retarder was up 33 and 9 percent; plaster was up 11 and 1 percent; gypsum board was up 15 and 17 percent.

The forecast for 1952 is hazy. Government controls which aim to cut down on housing have so far not been too effective in doing more than slowing down certain types of construction while others have boomed. With controls becoming more effective at the home level by restrictions of mortgage credit, the market for gypsum products may decline. However, there is also the possibility that dollar restrictions may cause a return to the shell type of construction which would stimulate the sale of finished wallboards that are most easily installed by individuals engaged in finishing their own homes. Altogether the trends are so mixed that any prediction is hazardous. Added to this is the political situation that is sure to arise over continuation of controls in a presidential election year. However, building is sure to be strong, and it seems that anything short of an all-out war should result in a continuation of the present high rate of demand for gypsum.

Phosphate Phosphate rock set a new record of production in 1950. A total of 11,114,150 long tons, 19 percent over the 1949 output, were mined during the year, most of this being produced in Florida and Tennessee, and Montana, Idaho, and Wyoming contributing some. Production was down slightly in Montana but up considerably in all the other states. As in previous years, more than half of the production went into the manufacture of superphosphates, with about 10 percent used in the rock form for fertilizer filler and direct soil use. Approximately 65 percent of all phosphate rock sold went to agricultural uses in some form. Exports used nearly 17 percent of the total production, chemical uses taking 15 percent. Miscellaneous uses amounted to 3 percent and animal feed 1 percent. The value of the phosphate rock produced in 1950 at the mine was $69,392,398. Indications are that 1951 was a good year in the phosphate industry, expansion taking place at several of the larger plants and exploration continuing to establish new deposits.

Potash The long-term upward trends in the production and sales of domestic marketable potassium salts, which had been in evidence from 1934 to 1948, and which had been interrupted in 1949 by the New Mexico strike, were resumed in 1950. According to reports by producers to the Bureau of Mines, the total domestic output of potassium salts in that year reached a record high of 2,241,044 short tons, with an equivalent K_2O content of 1,286,762 tons. This was nearly 9 percent over the 1949 figure. Sales in 1950 were 2,220,803 tons, with an equivalent K_2O content of 1,275,494 tons; both were records. The value of the sales also reached a new high—$39,695,038. Stocks in producers' hands at the end of 1950 were larger than in recent years. Exports declined in both quantity and value in 1950 from 1949, but imports increased greatly in both categories. Apparent domestic consumption of potash (K_2O) in 1950 increased 339,629 tons from the 1949 figure.

Production of 60-62 percent K_2O minimum grade of the muriate of potash increased markedly in 1950 over 1949, rising to a record high, but there was a notable decrease in the output of lower-grade muriate. The production of manure salts dropped very sharply—from 177,315 tons in 1949 to only 21,532 tons in 1950. The combined output of sulphate of potash and sulphate of potach-magnesia reversed its recent trend and rose in 1950 to a new high of 223,109 tons.

The Western states remain dominant in domestic production of

potash. California, New Mexico, and Utah furnished virtually all of the 1950 output, the largest part coming from the deeply buried Permian sylvite and langbeinite deposits in the Carlsbad region of southeastern New Mexico. The eastern United States supplied only a small quantity—from Maryland and Michigan.

The strike called on November 19, 1949, by the CIO Mine, Mill, and Smelter Workers' Union Local 415 at the three potash-producing plants of the Carlsbad region, N. M., ended January 31, 1950, after an interval of 73 days.

Bauxite The mine production of bauxite in the United States in the first quarter of 1951 according to the Bureau of Mines, totaled 386,361 long tons (dried equivalents), as compared to 325,025 and 317,738 tons, respectively, in the same quarters of 1950 and 1949. This indicates that total 1951 domestic production probably considerably exceeded the preliminary total of 1,347,039 tons for 1950 released by the Bureau. Again, practically all of this came from Arkansas, with Alabama and Georgia providing only 14,306 tons (3 percent) in the first quarter of 1951 and a similar percentage in 1950.

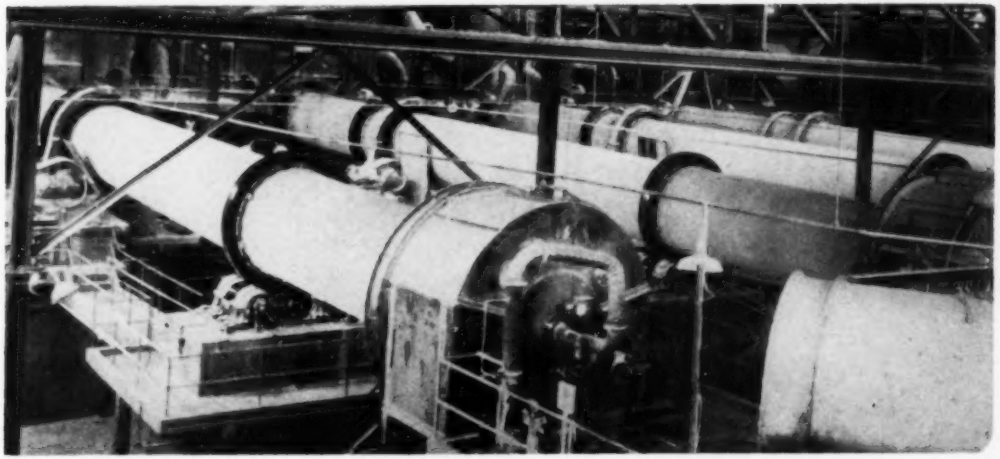
Imports in the first quarter of 1951 totaled 686,981 tons, as compared to 628,301 tons in 1950, indicating that figures for all of 1951 might show an increase over the 2,476,677 tons imported in 1950. Of the total imported in the first quarter of 1951, about 81 percent, 558,420 tons, came from Surinam.

Fluorspar In the first nine months of 1951 domestic production of fluorspar reached a total of 254,237 short tons, indicating that production for the entire year far exceeded the 283,200-ton volume of 1950 and 236,400-ton volume of 1949, and probably slightly exceeded the 1948 figure of 336,000 tons. Imports for the nine months totaled 109,303 tons, indicating a total for the year about equalling the 164,634-ton volume of 1950.

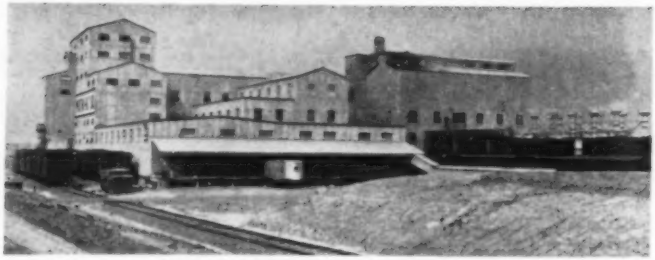
Feldspar Crude feldspar production in 1950 increased 10 percent in tonnage and 12 percent in value over 1949, according to reports by producers to the Bureau of Mines, totals being 407,925 long tons and $2,564,587. Ground feldspar increased 15 percent in quantity and 13 percent in value. The quantity of ground feldspar shipped to the pottery industry increased 25 percent, enamel industry 30 percent and glass industry 6 percent in 1950 over 1949. Substitutes for feldspar in glass manufacture, such is aplite and nepheline syenite, helped to lessen the over-all demand in this divison of the ceramic industry. The large increase in sanitary ware high-temperature electrical insulators, and whiteware manufacture was the reason for the unusually large demand for feldspar in the pottery industry. The demand for domestic appliances such as stoves, washing machines, and refrigerators, and the broader application of porcelain enamels in the construction field increased the market demand for feldspar. Imports of crude feldspar from Canada decreased 22 percent in 1950, as compared to 1949.

Asbestos Both production and shipments of asbestos in the United States were a little lower in 1950 than in 1949, according to reports by producers to the Bureau of Mines, totaling 41,538 and 42,434 tons, respectively. High prices were reflected in a sales value that surpassed all previous records. Chrysotile was produced in Vermont and Arizona, and amphibole sales were reported from California, Georgia, North Carolina, and Oregon. Demand was exceptionally strong, and imports reached an all-time high. Canada supplied the major part of the imports, 705,253 tons, but important contributions, particularly of the strategic grades, were made by Africa. Southern Rhodesia furnished most of the low-iron chrysotile required for certain electrical applications. South Africa supplied all of the amosite, and most of the crocidolite (blue asbestos) consumed in the United States.

Roofing Granules The production of roofing granules in 1950, as reported by producers to the Bureau of Mines, amounted to 1,797,729 short tons, valued at $26,852,848—an increase of 33 percent in quantity and 34 percent in value, as compared with 1949. The total production was the largest on record, and the total average value showed an increase of 19 cents a short ton over 1949, a record value. The production of natural granules increased 39 percent, and the artificially colored 32 percent, while brick granules decreased 42 percent. The average value for natural granules increased 5 cents—to $8.80; artificially colored 35 cents—to $17.21; and brick $2.19—to $19.31.



• View of the four 6½- by 100-ft. rotary lime kilns operated by United States Lime Products Corp. at Henderson, Nevada.



• Extensive new facilities at Morton Salt Company's Kleer Mine, Grand Saline, Texas, had their first full year of operation in 1951. Shown here is a general view of the surface buildings.

Boron Minerals A new boron minerals production record was established in the United States in 1950, according to reports of producers to the Bureau of Mines, United States Department of the Interior. Domestic consumption was at its peak, and exports reached a new all-time high. Output was 647,735 short tons containing 191,000 tons of boron oxide, as compared with 467,592 tons of mineral containing 139,200 tons of boron oxide sold or used by producers in 1949. This total was 39 percent over the 1949 output of 467,592 tons.

Fuller's Earth The production of fuller's earth in 1950 reached the highest peak in the history of the industry, according to reports of producers to the U. S. Bureau of Mines. The tonnage increase over 1949 was 23 percent, and 18 percent over the previous record year, 1930. Total production in 1950 was 396,025 short tons, valued at $6,504,733.

The use pattern in 1930 was much different from that of 1950. Mineral oil refining accounted for most of the tonnage consumed in 1930, whereas in 1950 it was still the largest single consumer, augmented by new uses such as absorbents, insecticides, and rotary drilling mud. Fuller's earth consumed in mineral-oil refining in 1950 totaled 156,643 tons or 40 percent of the total output, as compared with 47 percent in 1949. Absorbent uses accounted for 83,684 tons or 21 percent, as compared with 22 percent in 1949; insecticides, 68,928 tons or 18 percent, as compared with 12 percent of total for 1949; rotary-drilling mud, 37,631 tons or 10 percent, as compared with 9 percent in 1949; and vegetable-oil, 21,261 tons or 5 percent in 1950, as compared with 6 percent in 1949.

Illinois was the only state reporting production in 1949 which did not report production in 1950, while all other states had increases in 1950 over 1949. Florida and Georgia combined accounted for 62 percent of the total United States tonnage. The average value rose from $16.20 in 1949 to $16.42 in 1950.

• Unique setup for the recovery of limestone fines at the plant of G. & W. H. Corson Co., Plymouth Meeting, Pa. The product of the classifier is marketed as agricultural limestone.

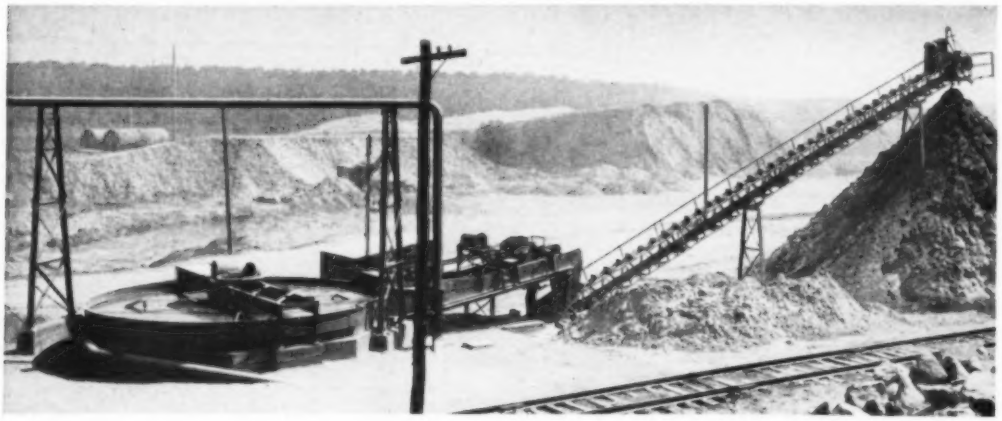
Bentonite Bentonite producers enjoyed the best year in the history of the industry. According to reports of producers to the U. S. Bureau of Mines, there was in 1950 a 12 percent tonnage increase over 1949, as well as a 23 percent in value, as compared to 1949. The general upswing in national economic conditions, particularly the increased activity in oil-well drilling and the overall expansion in the foundry industry were directly responsible for this large bentonite production. Sales to foundries in 1950 increased 41 percent over 1949; sales to the rotary drilling industry increased 14 percent. Total output was 973,833 short tons, valued at $8,560,669.

Nine states reported bentonite production in 1950, the same as in 1949. Increases in tonnage appeared in California, Mississippi, South Dakota, and Wyoming, and decreases in Texas, Arizona, Utah, and Idaho. Colorado reported a small tonnage in 1950, but did not report in 1949.

The Wyoming-South Dakota district accounted for 60 percent of the total bentonite produced in 1950 (Wyoming—40 percent and South Dakota—20 percent), as compared with 56 percent in 1949. Texas furnished 3 percent of total sales, the same as in 1949 and 1948. The remainder was produced in California, Mississippi, Arizona, Colorado, Utah, and Idaho. The average value per ton as reported by the producers to the Bureau of Mines in 1950 increased to $8.79 per ton.

Fire Clay Fire clay sold or used in the United States in 1950 was the second-largest in the history of the industry, superseded only

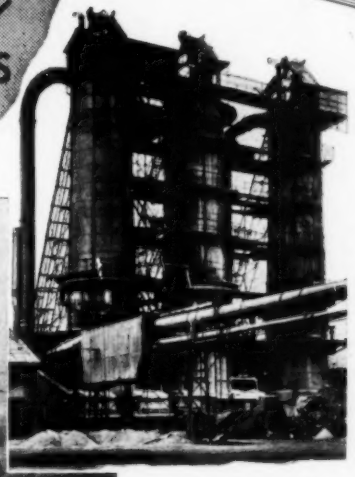
(*Continued on page 163*)



BRIGHTER DAYS AHEAD

For LIME PRODUCERS who install

Priest
VERTICAL KILNS



100-ton Priest Vertical Kiln (Oil Fired) recently installed for Odda Smelteverk A/S Odda-Norway.

Three Priest Vertical Kilns with 17 years of accredited operation. Each Kiln has a capacity of 100 tons of burnt lime per day.

It takes no prophet to predict that future quotas of lime production will be easier and more profitable to fulfill in plants equipped with the revolutionary Priest Kiln.

Developed by Priest Furnaces Ltd. of Middlesbrough, England, in collaboration with Dr. N. V. S. Knibbs, this super-efficient unit has a long and highly successful record.

Compact Priest Kilns require only a small site. They operate automatically, and are completely mechanized.

A unique feature — the patented water-cooled burner — maintains even fuel distribution, and assures maximum output of a product meeting all specifications.

Many tested-and-proved advantages of Priest Kilns may be listed:

- FLEXIBILITY
- AUTOMATIC CONTROL
- SUPERIOR QUALITY LIME
- LOW FUEL COSTS
- LOW MAINTENANCE
- LOW LABOR COSTS
- 98% YEARLY OPERATION

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Report on Current Labor Developments

by S. HERBERT UNTERBERGER

S. Herbert Unterberger & Company
Industrial and Labor Economists
Washington, D. C.—Philadelphia, Pa.

Salary Stabilization Rules Reviewed

MOST of the publicity received by the wage and salary stabilization program has dealt with the limitations imposed upon, and the increases allowed in, the wages and salaries of the bulk of the working population, particularly the part that is unionized.

The specialized rules covering the managers of American businesses have been largely overlooked. These rules are issued by the Salary Stabilization Board, which has jurisdiction over the salaries of all executive, administrative, and professional employees, and all outside salesmen except those who are represented by a labor union. They are of special importance to every businessman because they determine what he can do for his important top-level employees and, if the business is incorporated, they determine allowable increases in his own salary.

To date, the Salary Stabilization Board has issued five General Salary Stabilization Regulations which permit employers to make certain increases without prior approval of the Salary Stabilization Board. Other increases are not forbidden, but they may not be put into effect until they have been approved by that Board. The highlights of these regulations are reviewed below.

General Salary Increases

If general increases in the salary levels of the executive, administrative, and professional personnel have been less than 10 percent since January 15, 1950, future increases in salaries and other compensation may be permitted in amounts up to the difference between the permissible 10 percent and the total of such increases.

Companies or groups of employees thereof, having no payroll period ending on or about January 15, 1950, because they were not in operation at that time, or having plainly abnormal pay levels during that period because of seasonal peculiarities, broad changes in product mix, wide swings in employment, and the like, may apply for appropriate and supportable adjustments of the base period compensation level figures against which employee compensation changes are to be measured.

Cost-of-Living Increases

Cost-of-living increases for executive, administrative, and professional employees may be given without prior approval of the Salary Stabilization Board only if they are required by cost-of-living provisions in a written contract or in a written salary plan formally determined and and communicated to the employees on or before January 25, 1951.

Even then, such cost-of-living increases based upon changes in acceptable cost-of-living prior to January 16, 1951, must be charged against the amount of increase allowable under the 10 percent formula discussed below.

Increases to Maintain Compensation Relationships

An employer may from time to time make adjustments in the salaries and other compensation of employees subject to the jurisdiction of the Salary Stabilization Board in order to re-establish and maintain historical or customary relationships and differentials which existed on January 25, 1951, between the compensaton of various groups of his employees.

The method for determining the precise amount allowable for maintaining such customary or historical relationship is quite complex. As a general rule, if the percentage increase granted to employees subject to the jurisdiction of the Salary Stabilization Board is less than the percentage increase granted to employees subject to the jurisdiction of the Wage Stabilization Board, the difference represents the authorized percentage by which the salaries and other compensation of employees under the jurisdiction of the Salary Stabilization Board may be increased.

Such increases must first be used to restore historical or customary differentials in the company between the compensation of foremen and supervisors and the employees they supervise and thereafter to remove other inequities.

Furthermore, employers who on or before January 15, 1951, had a plan or practice of paying foremen or supervisors additional compensation for hours worked in excess of a normal work week may continue to pay additional compensation to such employees in accordance with such plan or practice. Employers who did not have such a plan or practice may pay a foreman or a supervisor in a postion comparable to a foreman additional compensation during a regularly extended work week for hours worked in excess of the normal work week, but the additional compensation shall not exceed his straight-time rates.

Merit and Length-of-Service Increases

Merit and length-of-service increases may be granted in accordance with a salary plan. However, the total dollar amount of all such increases granted during a calendar year may not exceed 6 percent of the total base compensation (compensation paid to an employee for the normal work week, month, or other normal time unit exclusive of fringe benefits) of all such employees during the calendar year. To be a salary plan, it must have been contained in a written statement of policy or procedure or a written notice furnished to or posted for the employees; it must have contained salary ranges showing clearly designated minimum and maximum rates for each position or classification; and it must have provided that the employee would normally be reviewed for a merit increase or be entitled to a length-of-service increase at or before the time the increase may be granted.

In the absence of a salary plan, an employer with salary ranges may grant merit or length-of-service increases in any calendar year up to an amount equal to 6 percent of the total base compensation of the employees in the group. However, no employee shall be raised to a salary higher than the maximum of the salary range for his position or classification.

In the absence of salary ranges, an employer with a personal or random method of payment may make merit or length-of-service increases, provided that the total dollar amount of all such increases during a calendar year does not exceed 6 percent of the total base compensation and that the maximum increase granted to any employee does not exceed 10 percent of his salary.

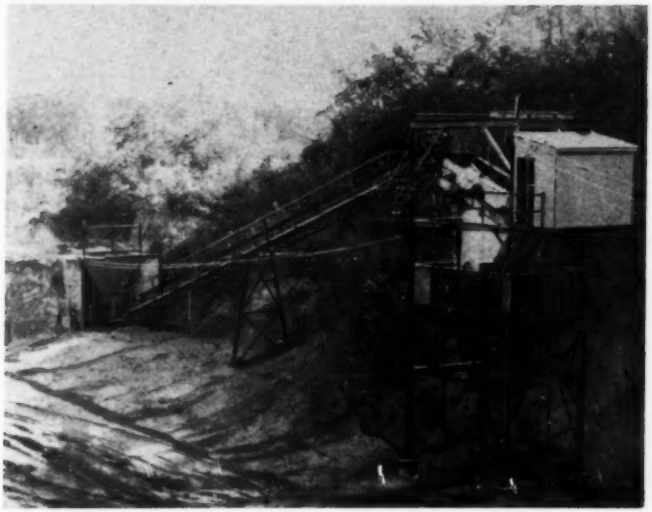
Compensation of Outside Salesmen

Outside salesmen compensated on a straight salary basis are governed by the regulation discussed above, just as other salaried employees.

Special rules apply to salesmen

(*Continued on page* 139)

Dry Screening Setup Proves Successful at Russo Plant



• A perspective of the newly-installed dry-screening plant of the Russo Sand and Gravel Company at Pittsford, N. Y., showing the complete setup. The feed hopper (background) is connected by a belt conveyor to the vibrating screen at the top of the truck-loading bin (foreground).

THE modern and efficient sand-and-gravel plant of the Russo Sand and Gravel Company, Pittsford, N. Y., was featured in the February, 1951, issue of PIT AND QUARRY. The plant produced about 1,000 tons a day of washed and screened sand, gravel, and crushed gravel. Since then, it was found necessary to increase the output of sand; and a new dry screening plant was installed for this purpose.

The new installation is a simple and compact operation which is producing at the rate of 50 t.p.h. The moist bank sand is successfully screened dry on a vibrating screen, equipped with ⅛- by 1½-in., slotted opening wire cloth, according to Don C. Russo, owner of the company.

Material is loaded by a shovel into trucks and transported to a feed hopper, which discharges the aggregate into a homemade feeder supplying a belt conveyor. From this point it is carried by the conveyor to the 4- by 12-ft., type "S" single-deck SECO scalping screen, manufactured by the Screen Equipment Company. The screen is installed at a 21-degree incline, and is operating counterflow at a speed of 1050 r.p.m.

The deposit, which also supplies the nearby original plant contains excellent fine, medium, and coarse grades of material conveniently segregated in various locations. In addition to the amount of aggregate supplied to the new plant (about 100 truckloads a day), a total of about 1,000 tons of material is sent to the plant proper.

Stockpiling problems are simplified by the utilization of a worked-out pit adjacent to the main plant as a storage area. The accessibility of the storage area to the new installation, as well as the screening operation of the plant proper, aids in the overall efficiency of the company.

• A closeup of the truck-loading bin and the screen equipment. A portion of the conveyor leading to the feed hopper is the background.

• Looking down on the vibrating screen, which efficiently separates the dry aggregate.

This recent installation is indicative of the steady improvements to plant facilities made by Mr. Russo since he took charge of the 80-acre property in 1941.

Labor Developments

(*From page* 138)

all or a part of whose compensation results from the commission method of wage payment. Only driver-salesmen who receive commission pay are not covered by any regulations at present.

Sales employees paid on a straight commission basis may not have the commission rate or the method or formula for the computation of commissions changed. However a drawing account may be increased or instituted for such an employee, provided that it does not exceed 77 percent of his total earnings in the calendar year 1950 or of the average of his total earnings in any three out of the five calendar years 1946 to 1950.

The salaries of sales employees paid on a straight salary plus commission basis may be increased by the amount of general increases discussed above, or they may be increased up to 77 percent of the total earnings in the calendar year 1950 or the average of the total earnings in any three out of the five calendar years 1946 to 1950, provided that the amount of the increase is deducted from total commissions earned during the current calendar year.

International Minerals & Chemical Corporation spokesmen have announced the following figures for the fiscal year ended June 30: earned per common share, $3.06, as compared with $3.40 last year; net sales, $66,257,884 against $58,402,180 in the preceding year; net profit, $6,514,130, as compared with $5,776,660 for 1949-50.

This plant at Hillsboro is one of three operated in Middle Tennessee by Ralph Rogers & Company.

C. A. Langford's Ketchall plant, located about 25 miles west of Chattanooga, is one of three now operated by the company.

Crushed Stone Boom In Middle Tennessee

another ON THE SPOT report

By WILLIAM M. AVERY

FOR some time the attention of the editors of PIT AND QUARRY has been focussed on the tremendous development of the crushed stone industry in Middle Tennessee. A preliminary investigation had revealed that since 1938 the number of fixed plants operating in that extensive area had actually increased about twelve fold, and that a very high percentage of the new plants were outstandingly well-equipped and efficient operations. Although we were aware in a general way of some of the factors which had sparked this upsurge of activity, it appeared to us that an uncommonly interesting and unusual type of story might be developed if the phenomenon were studied at close range.

Middle Tennessee is a natural geographical and political division which includes 40 of the 95 counties which form the state of Tennessee. It extends from the western edge of the Cumberland Mountains to the Tennessee River. A considerable portion of the area consists of a central basin formed by what is known as the Highland Rim. The basin is roughly elliptical in shape, with the major axis running east and west about 90 miles, and the minor axis running north and south about 65 miles.

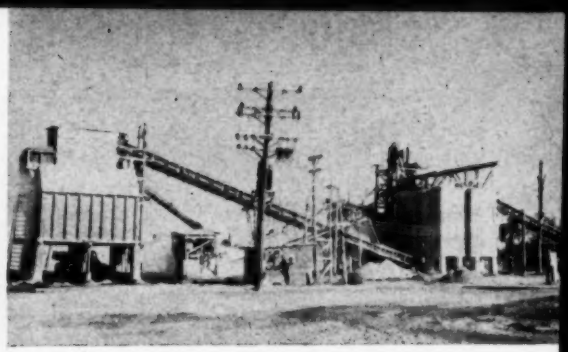
The Highland Rim is a formation of siliceous rocks, shales, cherts (decomposed flints suspended in clay), and cherty crinoidal limestones of extremely variable character. While it includes limestone formations which are entirely suitable for crushed stone operations, underground mining is frequently necessary in order to produce materials which will meet exacting specifications.

The central basin consists mainly of bluish-gray, fossiliferous limestones and calcareous shales of varying characters. Although there are occasional chert formations, flint rock is seldom encountered, and most of the limestone deposits can be worked successfully by open-quarry procedure.

Prior to 1938 only two plants, both operated by the Franklin Limestone Company, accounted for most of the crushed stone produced in Middle Tennessee. For road work and other major projects which required sizable quantities of crushed stone it had been the practice for the holders of contracts to set up temporary plants, elementary in design, to supply their needs, or to have materials shipped in. The state also owned and occasionally operated a few portable plants, but except for the two permanent plants

Below, left: The Danley plant of Franklin Limestone Co. at Nashville is the largest of this firm's six-plant network in Middle Tennessee.

Below, right: Columbia Rock Products Corporation's plant at Columbia in Maury County.



Above, left: One of the more recent installations is the Porter Brown Limestone Company's plant at Smyrna. The firm also operates a plant at Springfield.

Above, right : The Bilbrey Lime Company's plant at Murfreesboro.

previously mentioned, which were located at Nashville and Franklin, there was scarcely even a nucleus for an established crushed stone industry. During the 1920's, when Tennessee, along with North Carolina, led the entire South in highway construction, there had unquestionably existed an opportunity for the industry to gain a foothold, but for some reason or another the temporary type of operation persisted.

Today Middle Tennessee is undoubtedly as well equipped with established and efficient stone crushing plants as any comparable area in the world. With one exception, every county that has a town of 4,000 (or more) population is served by a modern crushing plant if limestone is available. By actual count there are 48 plants which range in capacity from 20 to 450 t.p.h. of minus 1¼-in. crusher run material. Of the total only seven are temporary plants in the sense that they were set up to take care of specific non-repeating demands. The entire group has a total hourly capacity of over 6,000 tons, and the average capacity per plant is over 125 t.p.h.

Obviously no single influence can account satisfactorily for a development of such magnitude. Upon close inspection it appears that a considerable number of unrelated, or only loosely related, factors helped to touch off the stone crushing boom in Middle Tennessee. By mere chance they were timed in such a way as to impart a chain reaction effect, with the result that an overall development, which might under ordinary conditions have required a generation or more to accomplish, was actually achieved in little more than a decade.

The first impetus for the large-scale development of the limestone resources of the area was undoubtedly the A.A.A. liming program. It created a relatively stable nucleus of demand upon which permanent plant operations could be predicated. Most of the plants which were built to supply this need were comparatively small, but they served the vital purpose of bringing new blood into the industry, and some owners were alert and ready to capitalize on any larger opportunities which might appear.

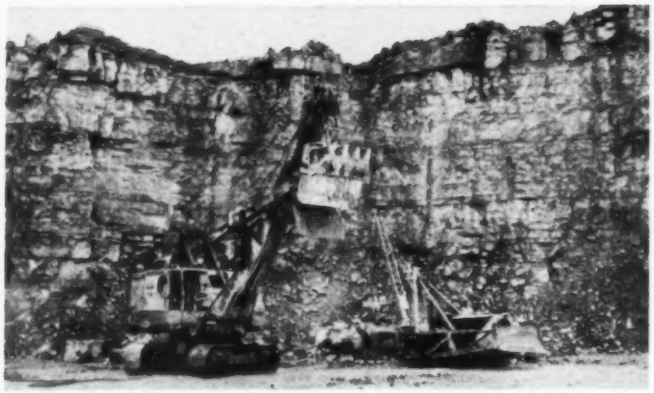
The larger opportunities, of course, materialized with the outbreak of World War II. Countless thousands of tons of crushed stone were required for the construction of army bases at Camp Forest, Smyrna, Nashville, and Clarksville, and for the atomic bomb development at Oak Ridge. During most of the war period the eastern half of Middle Tennessee was the maneuver area for the entire Second Army, and the resulting wear and tear on highways and secondary roads created a tremendous need for construction materials. The area's phosphate plants were expanded and operated at peak capacity during this period, creating a further immediate demand for construction materials, as well as a backlog of demand to repair the inevitable damage to highways.

All of these factors combined to create an unparalleled need for crushed stone, and existing plants were enlarged, and altogether new plants were built to meet that need. Several considerations favored the development of relatively small plants fairly close to the point of use. Considerable portions of Middle Tennessee are not served at all by railroads, and long hauls and com-

48 plants now serving area which prior to 1938 had only 4

Below, left: The Cowan Stone Co. operates two plants in Franklin County, one at Cowan (pictured here), and one at Anderson.

Below, right: Cedar Grove Lime Company's plant at Pulaski.



One of two electric shovels at Franklin Limestone Company's Danley plant marks time while a crawler tractor and jib crane rig breaks oversize with a 4,100-lb. drop ball.

paratively high rates are the rule in most sections which have rail service. The wide availability of suitable limestone deposits throughout most of the area also clearly favored the small plant, since any cost advantage in large-scale production could be off-set by lower delivery costs.

Accordingly, most of the crushing plants were built to serve areas within a maximum shipping range of about 25 miles, using truck haulage almost exclusively. Out of the 48 plants now operating in the area, only seven* appear to ship by rail.

For much the same reasons a majority of the companies operate just one plant. The exceptions are Franklin Limestone Co., which operates six plants in all, C. A. Langford with three plants, Ralph Rogers & Co. with two permanent plants and one temporary setup, and Porter Brown Limestone Co., Cowan Stone Co., and Duke Lime & Stone Co., each with two plants.

With the exception of two very small establishments, the Middle Tennessee crushing plants range in capacity from 400 to 3,600 tons per 8-hr. day. Most of the plants were originally balanced to a 20- by 36-in. primary jaw crusher, permitting the use of a ¾-cu. yd. shovel in the quarry. About half the plants built since 1938 have already undergone some form of expansion program, and a number of the operators have installed larger primary crushers.

Most of the individuals who have established crushing plants in Middle Tennessee had no previous experience in the stone business. They were farmers, merchants, contractors, salesmen, and, in a few instances, even school teachers. Regardless of what walk of life they came from, they seem to have adapted themselves readily to the demands of the stone business. Among all the companies established in the area since 1938 there has been only one failure (a very small operation), although there have inevitably been a few changes of ownership.

The equipment investment per plant varies considerably but appears for most installations to bear a surprisingly constant relationship to capacity. For the modern, streamlined, closed-circuit type of plant which predominates among the group, the equipment investment at present-day price levels runs approximately $125 per ton of crusher run material per day. This figure includes all quarry and processing equipment, but does not include delivery units. It increases somewhat for very small plants, and drops slightly for the larger installations, but the variation is rarely more than 10 percent either way.

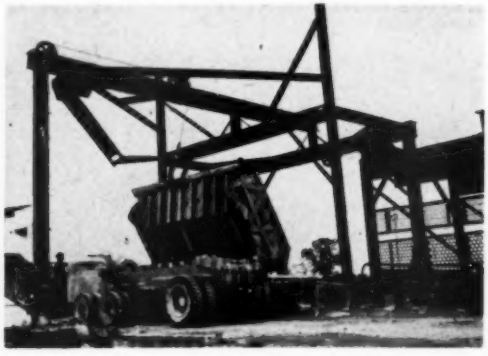
From the standpoint of market diversification the Middle Tennessee crushing plants are unquestionably now on the firmest footing they have enjoyed since the plant construction boom was launched. For a time many of the plants were precariously dependent upon the A.A.A. program. For example, in 1944 there were orders for 100,000 tons of agricultural limestone in Robertson County alone, and several counties in the area ran over 50,000 tons per year during the period when the entire program was financed by the Federal Government. The farm demand was unquestionably a decisive factor in enabling many of the newly-established plants to gain a firm footing, but this market has dropped off steadily since the war, and is now largely handled on a by-product basis. Today none of the companies is dependent upon ag-stone sales in order to remain in business, although the tonnage is still a significant factor in the general prosperity of the industry.

That the area continues to support 48 crushing plants is at least in part a result of the fact that the

*Four plants operated by Franklin Limestone Co., two operated by Cowan Stone Co., and one operated by Ralph Rogers & Co.

A 2-cu. yd. electric shovel at the Danley plant loads stone into one of the five side-dump semi-trailers which haul to the primary crusher.

The semi-trailers used at the Danley plant are discharged by means of an elbow-type dumping mechanism.



construction boom which started in the early 1940's has never really subsided. Although road construction has been, and will continue to be, a factor of tremendous importance, industrial and residential construction and farm improvement work are also accounting for huge tonnages of crushed stone. The central basin of Middle Tennessee is a rich farming area, and its prosperous farmers are today using sizable quantities of crushed limestone to improve their own roads as well as the fertility of their fields. The number and wide distribution of plants, and the resulting accessibility of the materials produced, have undoubtedly created markets where none would have existed if the materials had not been readily available.

The Middle Tennessee stone producers have relatively little competition from sand and gravel. Except for river deposits, the area's only natural source of sand and gravel is from a glacial deposit at Estill Springs, not far from the Alabama border.

The growth of an established stone industry in the Middle Tennessee area has unquestionably saved the state of Tennessee untold thousands of dollars on road work. Not only has the cost of road materials been reduced considerably, but better materials have been made available, with a beneficial effect upon maintenance as well as construction costs. 'Today state specification material rarely costs more than $1.25 per ton at the plant, and in some instances the price is even lower than this. Under the old system of setting up temporary plants to supply specific jobs, inferior materials were often used.

Of the 48 plants operating in Middle Tennessee, 33 are supplied from open quarries and 15 from underground mines. All but five of the latter are located on the Highland Rim, where one of the primary problems is the avoidance of flint rock. Even apart from this consideration, however, there seems to be a definite trend toward underground operations. Those who have made the change point to such advantages as the elimination of stripping, improved fragmentation, and the constant moisture and temperature conditions which prevail underground.

In order to obtain a clearer understanding of the stone boom in Middle Tennessee, we conducted fairly detailed studies of what we believed to be representative plants in the area. Our selections were necessarily somewhat arbitrary, and they undoubtedly reflect in some measure the need of maintaining a reason-

Crushed Stone Operations in Middle Tennessee
1. J. R. Wright & Sons, Dover
2. Simpson Stone Company, Clarksville
3. Duke Lime & Stone Company, Clarksville
4. Clarksville Stone Company, Clarksville
5. Ralph Rogers & Company, Inc., Clarksville
6. Porter Brown Limestone Company, Springfield
7. C. A. Langford, LaFayette
8. Arnold Rock Company, Livingston
9. Farmers Stone Company, Livingston
10. Algood Lime Company, Algood
11. A. Langford, Cookeville
12. White County Highway Department, Sparta
13. R. D. Davis, Sparta
14. Oldham Stone Company, Rome
15. Lebanon Limestone Company, Lebanon
16. Franklin Limestone Company, Martha
17. Eller & Olson Stone Company, Nashville
18. Jesse Allen Lime Company, Inc., Burns
19. Duke Lime & Stone Company, Cumberland Furnace
20. Ward & Elkins, Pleasantville
21. Wayne Limestone Co., Waynesboro
22. Pilot Knob Limestone Company, Gallatin
23. Williamson County Highway Department, Franklin
24. Columbia Rock Products Corporation, Columbia
25. Cedar Grove Lime Company, Inc., Pulaski
26. Jim Stammer, Lewisburg
27. Lewis Stephenson, Fayetteville
28. Evans & Whitson, Fayetteville
29. C. R. Pickle & Son, Shelbyville
30. Cowan Stone Company, Cowan
31. Cowan Stone Company, Anderson
32. Ralph Rogers & Company, Inc., Hillsboro
33. C. A. Langford, Ketchall
34. Ellibrey Lime Company, Murfreesboro
35. Porter Brown Limestone Company, Smyrna
36. Chattanooga Rock Products Company, Smyrna
37. Lambert Brothers, Ashland City
38. W. D. Rock & Lime Company, Summitville
39. Ralph Rogers & Company, McMinnville
40. Franklin Limestone Company, Nashville
41. Franklin Limestone Company, Old Hickory
42. Franklin Limestone Company, Clifton
43. Franklin Limestone Company, Waverly
44. Franklin Limestone Company, Franklin
45. Rogers & Wilson, Jackson
46. S. N. McPherson, Smithville
47. H. W. Caldwell, Ashland City
48. Ralph Rogers & Company, Inc., Davidson County

W. C. McDaniel, Industrial Tractor & Equipment Co., Nashville, and Charlie Langford.

able travel schedule. In this portion of our project we were fortunate indeed to be able to draw upon the intimate knowledge and exhaustive memory of W. C. (Mac) McDaniel, vice-president of the Industrial Tractor & Equipment Company of Nashville, with whom we spent the greater part of a week covering a very jagged route between Chattanooga and Nashville.

Franklin Limestone Company

Franklin Limestone is the dean of the Middle Tennessee crushed stone producers. The company was founded in 1911, and its original quarry was established at Franklin, Tenn., in Williamson County, to furnish ballast for the L. & N. Railroad and to supply materials for the construction of the Lewisburg & Northern branch of the L. & N. During World War I the Franklin plant turned out great quantities of stone for work at Sheffield, Ala., and during the same period the company also operated a quarry at Whitehead, Tenn., for ballast production.

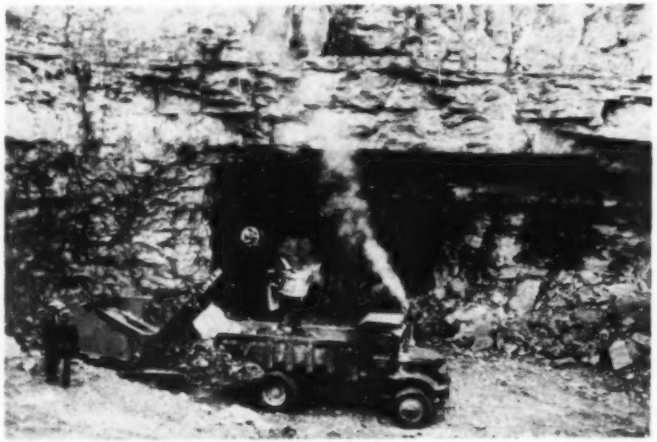
In 1922 Franklin Limestone was consolidated with the Newsome Crushed Stone Company, and the home offices were moved to Nashville. The following year a new quarry was opened at Nashville at the location of the present Danley plant. Other new properties were opened in the following sequence: a ballast, road stone and agricultural limestone plant at Martha, Tenn., in 1938; the Rock Hill plant (aggregates and agricultural limestone) near Waverly, Tenn., in 1941; a road aggregate and rip rap plant at Clifton, Tenn., on the Tennessee River in 1950; and an aggregate and agricultural limestone plant at Old Hickory in Davidson County in 1951.

Up until 1936 all the company's plants were tram car and hand loading operations. In that year shovels were installed in the quarries, and the modern system of hauling by truck to a primary crusher was adopted. The six plants which the company now operates have a total capacity of 1,100 t.p.h. The Danley plant at Nashville is the largest of the group, with an output of 400 t.p.h. Capacities at the other locations are as follows: Rock Hill, 200 t.p.h., Clifton, 150 t.p.h., Franklin and Old Hickory, both 125 t.p.h., and Martha*, 100 t.p.h.

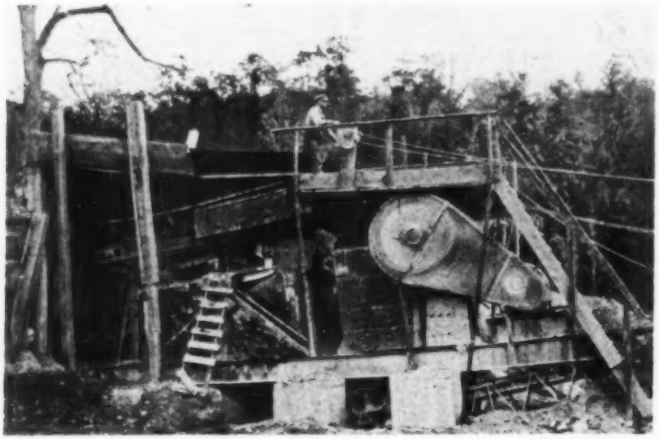
The Danley plant, which was the only unit in the Franklin Limestone network we were able to visit, is located on an extensive quarry property on the outskirts of Nashville. The small amount of overburden is stripped with bulldozers, and drilling is done with two Bucyrus-Erie well drills. The working face has a maximum height of 85 ft.

Secondary breaking of oversize from primary blasts is done with a 4,100-lb. drop ball which is handled by a Caterpillar crawler tractor equipped with a Hyster jib crane. The use of the drop ball has practically eliminated secondary drilling and blasting operations, which once required a full-time crew of six.

Two electric-powered shovels, a 2½-cu. yd. Bucyrus-Erie 54-B and a 2-cu. yd. Marion, are used in recovery operations. Five Easton TR-10 sidedump semi-trailers, drawn by Ford F-8 wheel tractors, are used for hauling from the quarry face to the primary crusher. An elbow-type mechanism dumps the haulage units into a hopper mounted over a 5- by 14-ft. Traylor feeder. The initial reduction takes place in



View in the C. A. Langford quarry which supplies that company's Ketchall plant. Opening beyond the truck is the start of underground mining operation.



The 30- by 42-in. jaw crusher at Langford's Ketchall plant is fed by a 42-in. by 14-ft. apron feeder.

*The quarry at Martha was sold to the Marquette Cement Manufacturing Company in 1946, but Franklin still operates a commercial stone plant on the property.

Left: George Henley, general superintendent, and Burt F. Taylor, president of Cowan Stone Co.

a 48- by 60-in. Traylor jaw crusher.

The primary crusher discharges onto a 36-in. wide inclined belt conveyor which delivers the stone to a 1,500-ton surge pile located over a reclaiming conveyor. The subsequent flow sheet is designed to achieve maximum flexibility for splitting loads and recrushing to desired sizes. Equipment in the secondary crushing circuit includes a 5- by 12-ft. double-deck Ty-Rock screen, a Traylor 7½ gyratory, and a Symons 4¼-ft. standard cone crusher, and for recrushing there are two Jeffrey 36-in. hammermills and a Symons 4-ft. short head cone crusher.

The hammermills are used for the production of wet manufactured sand and calcium carbonate. For sand production the material is thoroughly screened to remove as much over- and under-size as possible before it is fed to two screw classifiers. Just one gradation of material is produced, and output runs about 20 t.p.h.

Final sizing is done with a battery of four Ty-Rock vibrating screens, and the end products go into six 75-ton bins for loading or transfer to storage piles. Including the quarry crew, about 60 men are employed in day-shift operations at the Danley plant.

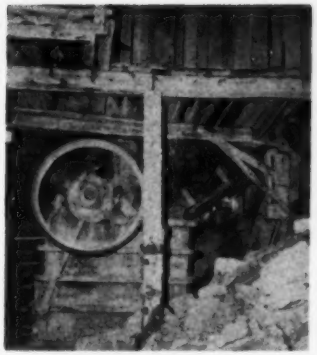
Officers of the Franklin Limestone Co. are Cale P. Haun, president, Sam Davis Bell, vice-president, M. T. White, secretary and purchasing agent, and C. K. Taylor, treasurer.

C. A. Langford

"Charlie" Langford of Gallatin, Tenn., is a veteran of the crushed stone business, his career stretching back more than 30 years. He produced road materials and agricultural limestone in Middle Tennessee during the years when there were no more than half a dozen plants of any description in the entire area. His plant at Gallatin in Sumner County was established in 1934 with an initial capacity of 60 tons per day. His first modern closed-circuit plant was built at Gallatin in 1940. It was built around a Pioneer 20- by 36-in. jaw crusher, with a roll crusher for secondary grinding and a hammermill for producing agricultural limestone.

About four years later this plant was sold to make way for a larger installation balanced to a Pioneer 24- by 36-in. jaw crusher. The new setup included 30-in. wide belt conveyors, a surge bin, a 40- by 22-in. triple-roll crusher, a 3XB Gruendler center-feed hammermill, and Pioneer scalping and gradation screens. Just recently the Gallatin plant was sold to the Duke Lime & Stone Company and moved to Clarksville, Tenn., where it is being operated as that company's No. 2 plant.

In 1945 Mr. Langford opened a new deposit at Cookeville. The plant installation, consisting almost entirely of Pioneer equipment, included a 20- by 36-in. primary jaw crusher, three 30-in. lattice-frame



At the Cowan plant a heavy-duty apron feeder discharges into a 30- by 42-in. primary jaw crusher.

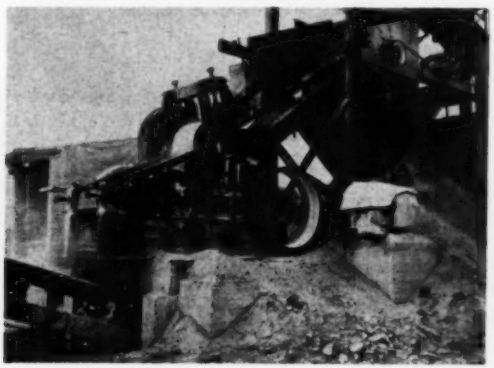
conveyors, a surge bin, a 40- by 22-in. triple-roll crusher, a 4- by 8-ft. scalping screen, a 3- by 16-ft. tandem gradation screen, four 21-cu. yds. steel bins, and a Williams NF-30 pulverizer. This plant is still in operation and has a capacity of about 100 t.p.h.

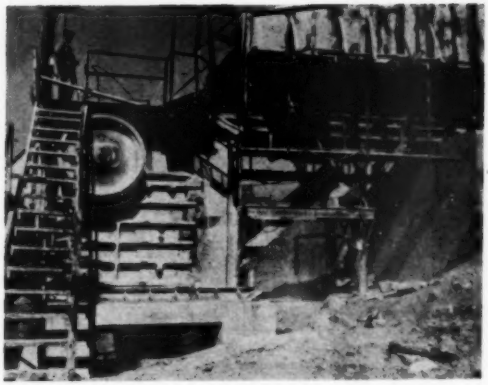
Mr. Langford's third plant was established at Lafayette in Macon County in the Fall of 1949. Here again a new deposit was opened with all recovery operations underground. The capacity of the plant, which is balanced to a 15- by 36-in. Pioneer primary crusher, is about 50 t.p.h., and the materials produced include concrete stone, agricultural limestone, and highway maintenance stone.

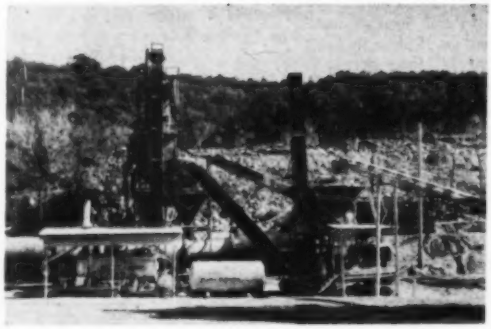
In the Spring of 1951 a fourth deposit was opened near Ketchall, Tenn., about 25 miles west of Chattanooga, to supply materials for resurfacing and widening a 23-mile section of U.S. 41 between Jasper and Mounteagle. Although this may

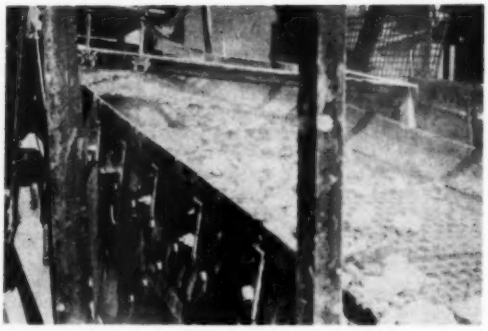
View in the quarry which supplies Cowan's No. 1 plant, showing the 1½-cu. yd. diesel-powered shovel loading one of the quarry-type trucks.

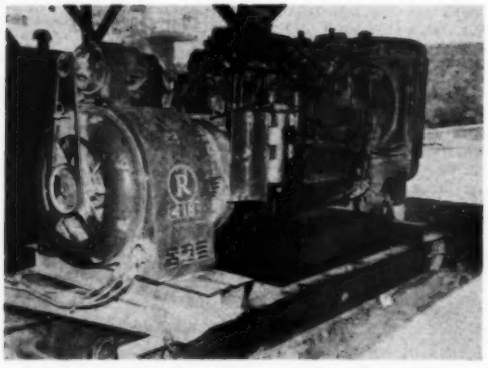
One of the roll crushers used for secondary reduction at the Cowan plant. Stone is scalped over double-deck screen (right) before secondary crushing.











Views at Ralph Rogers & Company's plant at Hillsboro show:

Top, left: Loading one of the trucks in the quarry.

Top, right: The 36- by 48-in. overhead eccentric jaw crusher.

Center, left: The 125-t.p.h. hot-mix asphalt plant.

Center, right: One of the two 5- by 14-ft. double-deck screens used for final sizing.

Bottom, left: Vibrating feeder discharging into one of the cone crushers.

Bottom, right: One of the diesel generating sets which supplies power for operating screens and conveyors.

prove to be a temporary installation, recovery operations have already gone underground in order to eliminate stripping and to assure a steady output of high-quality material.

Drilling is done with a Joy Kentucky Special wagon drill mounting a Joy TM-350 drifter, and air is supplied by a Joy WL-80 Model 50 stationary compressor. Stone is loaded with a ½-cu. yd. Lorain shovel and a ¾-cu. yd. Bucyrus-Erie shovel into Euclid trucks which make the comparatively short haul to the primary crusher.

The principal equipment in the plant proper includes a 30- by 42-in. primary jaw crusher, fed by a 3½- by 14-ft. apron feeder, two 30-in. belt conveyors, a 4- by 12-ft. triple-deck vibrating screen, and a Symons 4¼-ft. standard cone crusher. With the exception of the last-named item, all the units, including the finished product bins, were supplied by Pioneer. The cone crusher is fed by gravity chute from the top deck of the vibrating screen, and the re-crushed material is returned to the main belt conveyor to close the circuit.

In addition to supplying the specific job for which it was set up, the Ketchall plant has also furnished stone for both maintenance and construction work to the state and county highway departments. Since fines are required in practically all the road stone specifications which the plant must meet, no effort is made to separate material for marketing as agricultural limestone. Production is at an average rate of about 200 t.p.h.

For several years now the Langford plants have been turning out crushed stone at the rate of at least 250,000 tons per year. Gallatin and Cookeville have each produced around 100,000 tons per year, and the Lafayette plant readily turns out about 75,000 tons per year. While the Gallatin plant was in operation, agstone accounted for 25 to 30 percent of total production, and a good fourth of the output of the Lafayette plant is still in this category. Agstone accounts for only a small share of the output at Cookeville.

When the Warren Limestone Co. combines the facilities of its two plants of McMinnville, this double-impeller breaker will be used for secondary crushing.

View in one of the room-and-pillar mines operated by Warren Limestone Co.

Cowan Stone Company

The Cowan Stone Co. was incorporated in the Spring of 1946, and later in the same year construction work was started on a plant near Cowan in Franklin County. Operations were started in October of that year, and the plant has been in continuous production ever since. Production has been increased steadily, and much of the original used equipment has been replaced with new units. The present capacity is about 175 t.p.h. Shortly after the company was formed, it purchased and began the operation of the Oolitic Mining Company at Anderson, Tenn., about 20 miles from Cowan. Principal production at this location is chemical stone, and the capacity is approximately 100 t.p.h.

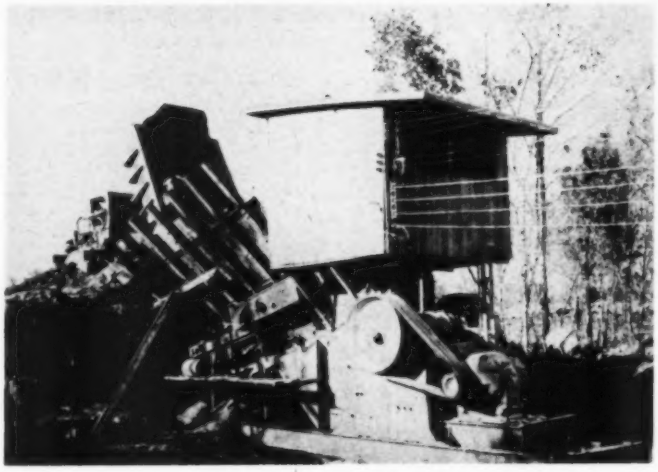
The Cowan plant is supplied from an open quarry which was originally operated in conjunction with the nearby Cumberland Portland Cement plant, now owned by the Marquette Cement Manufacturing Co. Overburden, which is stripped with a Koehring 501 machine, averages about 10 ft., but in places it runs as high as 16 ft. The present working face is around 88 ft., but by the time the development reaches the crest of the mountain, it is expected that the face will rise 125 ft. or more above the quarry floor.

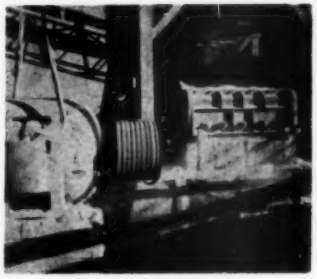
Six-in. diameter holes are drilled with an Armstrong blast hole machine, and jackhammers, supplied with air by a 500-c.f.m. Gardner-Denver portable compressor, are used for secondary drilling. The formation is quite hard and dense, and a good deal of secondary blasting is required. The use of Rockmaster delay caps in primary blasts has eased this problem materially.

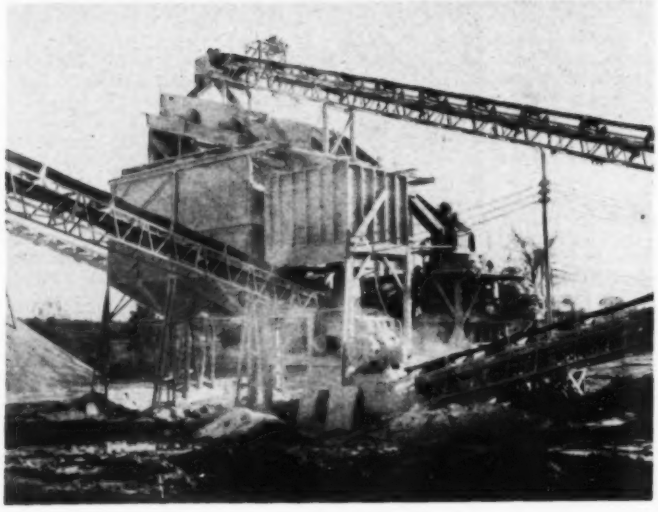
Two Euclid quarry-type trucks, one a 15-ton and the other a 10-ton unit, are used for the approximately 1,000-ft. haul from the face to the primary crusher. They are loaded with a Koehring 605 diesel-powered shovel equipped with a 1½-cu. yd. bucket.

At the plant a heavy-duty apron feeder discharges stone into a 30- by 42-in. Telsmith primary jaw crusher. The stone drops from the crusher onto a 30-in. wide inclined belt conveyor which discharges over a 4- by 10-ft. double-deck Allis-Chalmers scalping screen. Rejects from the top deck go to a 54- by 24-in. double-roll crusher, and from the bottom deck to a 40- by 22-in. triple-roll crusher, both Pioneer units.

Both the roll crushers discharge onto a 30-in. wide inclined belt conveyor which feeds the gradation screens mounted above the finished product bins. Two Pioneer triple-deck screens, one 4- by 12-ft. and the other 3- by 10-ft., and two Telsmith 4- by 10-ft. quadruple-deck screens are used for final sizing. Fines and agricultural limestone are produced







Various operating views at the Porter Brown Limestone Company's plant at Smyrna:

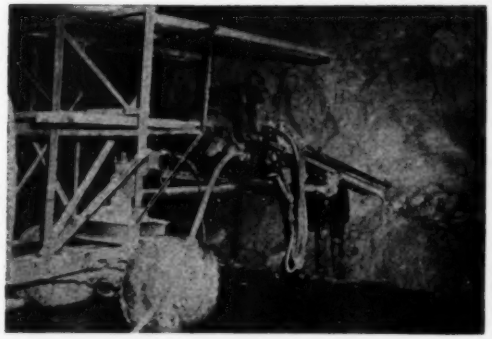
Top, left: Tractor bulldozer cleaning up around the 1½-cu. yd. shovel.

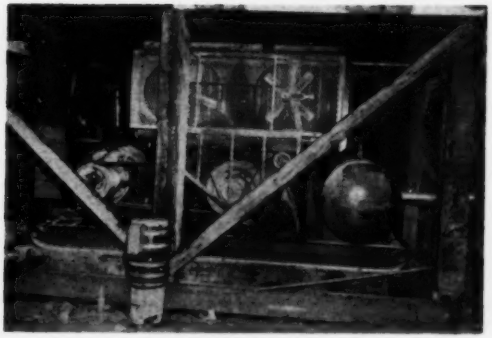
Top, right: Wagon drill crew at work in the quarry.

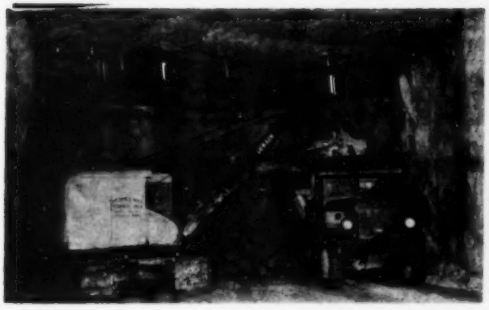
Center, left: One of the quarry-type trucks dumping into the apron feeder ahead of the 30- by 42-in. primary jaw crusher.

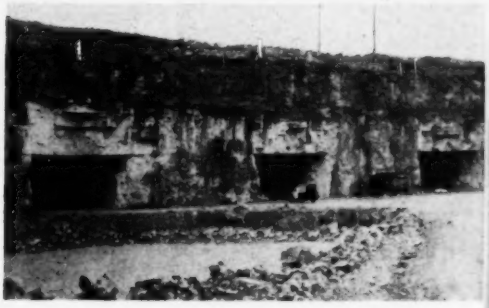
Left: A closeup of the screening and recrushing plant.

Above: Fines are produced with this crushing unit.









This group of photographs shows equipment and procedures used by the Columbia Rock Products Corporation at Columbia.

Top, left: Operating the drilling jib underground.

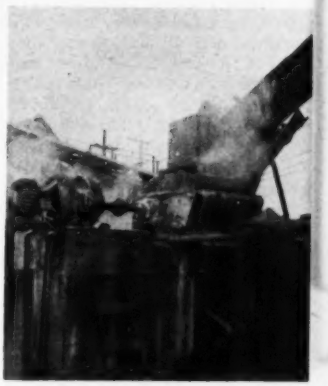
Top, right: The stationary compressor is set up between two of the mine openings.

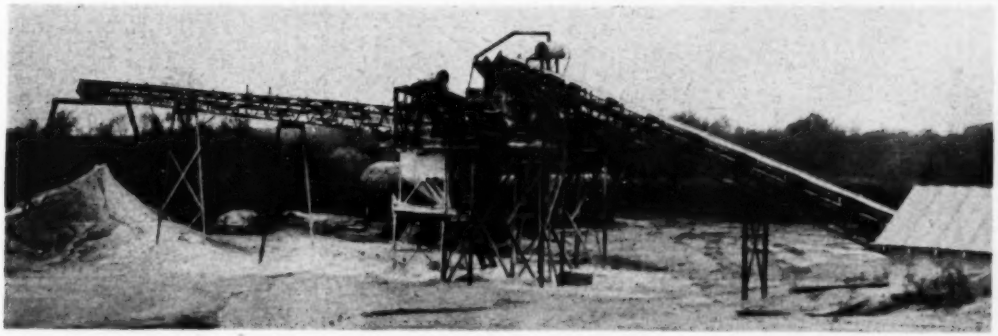
Second row, left: Loading one of the 15-ton trucks with a ¾-cu. yd. diesel shovel.

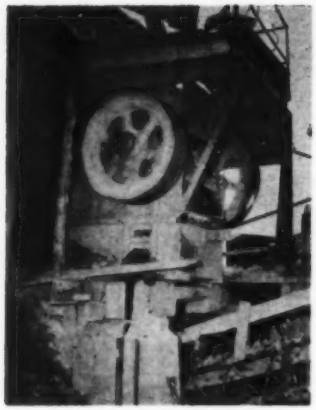
Second row, right: Operations went underground last summer after ten years of open quarry work.

Right: Oversize goes from a scalping screen by chute to this hammermill.

Below: A general view of the sand plant.







The 20- by 36-in. primary jaw crusher at Bilbrey Lime Co. in Murfreesboro.

with a 48-in. Jeffrey hammermill.

Agstone accounts for only about 10 percent of total production, with concrete aggregate, road stone, and ballast accounting for the bulk of the output. The Cowan plant recently supplied stone for some 70,000 cu. yd. of concrete used in the Arnold Engineering Development Center at Tullahoma, Tenn.

The deposit at Anderson is an oölitic formation of exceptional quality, and it has always been worked on an underground basis, with 60-ft. rooms and 40-ft. pillars. Drilling is done with a Joy Hydro-Drill jib mounting a TM-350 drifter. Air is supplied by an Ingersoll-Rand 315-c.f.m. portable compressor. Major items of equipment include a 25- by 40-in. Austin-Western primary jaw crusher fed by a 3-by 10-ft. apron feeder, a 10- by 36-in. Austin-Western jaw for secondary crushing, and a Williams NF-30 hammermill. Plus 5-in. stone, for which there is a special market, is taken out by means of a bar grizzly ahead of the secondary crusher.

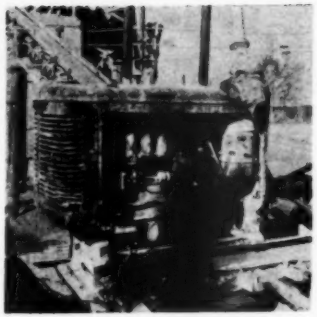
About 45 men are employed in the company's two plants. Burt F. Taylor is president of the firm, J. D. Henley is vice-president and is in full charge of operations at Anderson; and George Henley is general superintendent at Cowan.

Ralph Rogers & Company

One of the newer and costlier of the Middle Tennessee stone plants is the fine installation completed at Hillsboro in July, 1950, by Ralph Rogers & Co., Inc., of Bloomington, Ind. In the same year this company also established temporary plants at Clarksville, Tenn., and in Cheatham County. Each of these installations has a capacity of about 300 t.p.h., as compared with 350 t.p.h. at the Hillsboro plant.

Ralph Rogers & Co. opened up the deposit from which the Hillsboro plant is supplied. It is an open quarry in which overburden in places run as high as 20 ft., but averages no more than 8 or 10 ft. Stripping is done with a Bucyrus-Erie 38-B shovel, and blast holes are put down with a 29-T well drill. A 2-cu. yd. diesel-powered Lorain shovel loads the two 15-ton capacity Euclid trucks which haul to the primary.

The primary crusher is a 36- by 48-in. Lippmann overhead eccentric jaw which is fed by a 36-in. by 12-ft. Traylor apron feeder. The crusher discharges onto a 36-in. wide belt conveyors which delivers the stone to the top of the screening plant, where there is a double-deck 5- by 14-ft. Pioneer Mesabi screen for scalping and two double-deck 5- by 14-ft. Simplicity screens for final sizing. Rejects from the scalping screen drop into two 150-ton surge bins which are used to feed two Symons 4-ft. short head cone crushers, the actual feeding being done with Jeffery vibrating units.

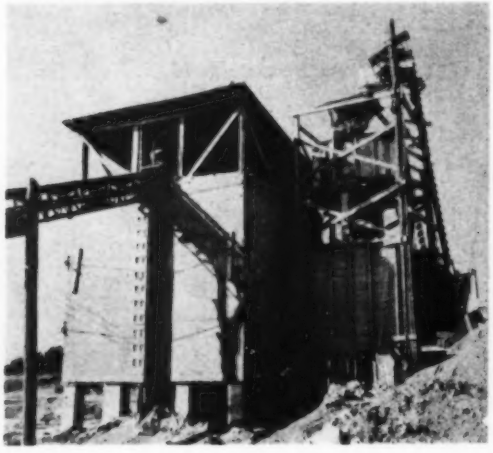


A separate diesel engine drives the primary crusher and feeder.

The recrushed material can be returned to the main 36-in. belt conveyor, or directed onto a parallel 30-in. conveyor which discharges into a splitter box mounted over the sizing screens. Six 100-ton steel bins for truck loading are located directly below the screens. There is also a separate two-compartment 100-ton steel bin used for feeding a 125-t.p.h. Hetherington & Berner hot-mix asphalt plant which adjoins the stone plant. This special-purpose bin is filled by gravity from the sizing screens, and the transfer of materials to a hopper over the asphalt plant dryer is handled by means of a belt conveyor.

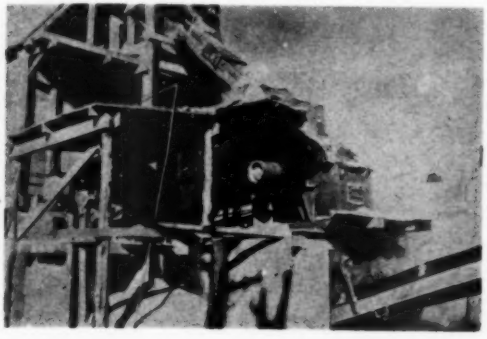
The crushers in the Hillsboro operation are driven by individual Caterpillar D-13000 diesel engines, and two Caterpillar diesel generat-

(*Continued on page* 159)



Left: The surge bin at the left is built on concrete masonry units supported on concrete piers. The unit at the right is an 8-ft. separator for manufactured sand.

Below: This pulverizing unit operates in closed circuit with a 4- by 12-ft. double-deck screen.



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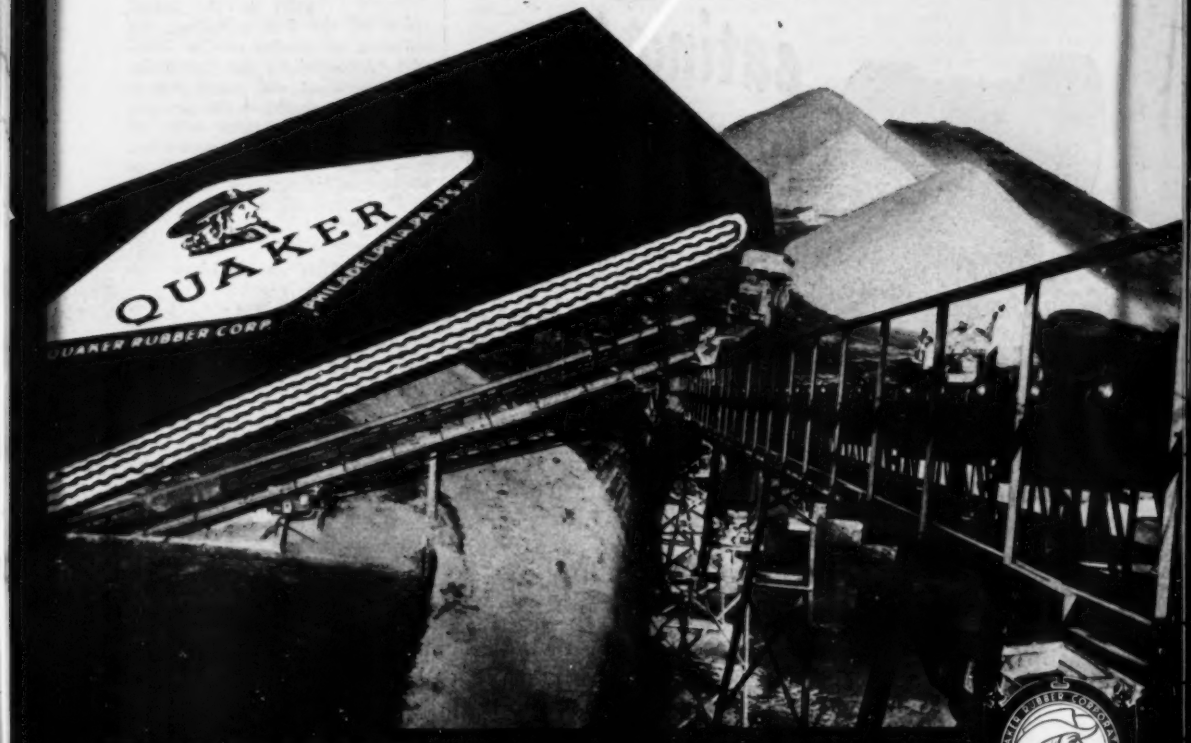


QUAKER RUBBER CORPORATION

DIVISION OF H. K. PORTER COMPANY, INC.

PHILADELPHIA 24, PENNA. BRANCHES IN PRINCIPAL CITIES

Nodulizing Process

(*From page* 101)

The kiln itself is a 12- by 450-ft. F. L. Smidth kiln presently designed to handle a feed-load varying from 90 percent nodules—10 percent slurry, to 25 percent nodules—75 percent slurry. Below its short chain system, the kiln is equipped with a nodule scoop feeder consisting of six scoops each having a 1-ft. 9-in. by 1-ft. 5½-in. open area. The internal scoop castings are of heat-resistant cast steel.

A dust collecting system utilizes the draft from the inlet side of the new induced draft fan to pull dust from the nodulizer discharge hoods and from the scoop feeder housing. Since this dust is carried in steam, special gas-burners with boiler-type controls at the points of dust origin add heat to maintain the internal temperatures in the ducts above the dew points until the gases are safely merged with the hot kiln gases at the fan and passed to the Cottrell.

This dust nodulizing installation was designed to handle up to 1,000 tons of dust per 24-hour day, with both nodulizers operating at capacity. Data on the operation as presently carried out may be of interest:

The nodules average about one inch in diameter, and are reasonably hard by the time they reach the kiln scoops.

The moisture content of the nodules is held at 18 percent plus or minus 1 percent. Additional water is included to satisfy the chemical needs of the partially-calcined dust.

The percent of clay addition may be varied to suit the mix requirements, but normally runs about 3 to 5 percent clay based on dry weight of dust. It is supplied as a thin slurry of 12 to 16 percent solids. The clay originates in the kiln-feed blending system and is pumped to the storage tank at 30 to 40 percent solids and 90 percent minus 200-mesh.

The kiln gas temperature at the point of nodule addition is 1,200 to 1,300 deg. F.

The new kiln at present is fed approximately 50 percent nodules and 50 percent slurry, giving an average kiln-feed solids to this kiln of 73 to 74 percent.

Nodulizing Process As compared with conditions existing prior to the installation of the first nodulizer, the following advantages can be definitely established for the dust-nodulizing inovation, and patent protection is being sought on this process:

The kiln-feed percent solids on the four kilns receiving no dust has been raised 4 percent - from 61 to 65 percent solids—with an average of 73 percent on the new kiln receiving nodulized dust.

Fuel consumption per barrel has been reduced about 6½ percent on the overall 5-kiln basis.

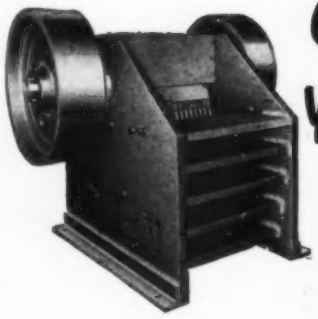
The increase in clinker capacity from the addition of the fifth kiln has been 10 to 11 percent greater than could have been expected without the dust nodulizing process. In other words, the new kiln, plus the process changes, have added approximately 28 percent more capacity instead of 25 percent, furnishing a 3 percent "bonus" to the overall capacity with only six months' experience.

The amount of dust collected and hauled daily, instead of increasing 25 percent, has *decreased* 25 percent. The dust offering to the Cottrell, per barrel burned, has been decreased about 40 percent by limiting the dust to one kiln in nodule form and thus minimizing the circulating load.

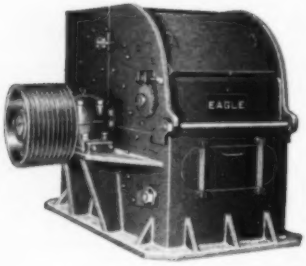
The burning operation has smoothed out and become more uniform. This is evidenced by lower unit brick costs and reduced down time. The latter provides further

(*Continued on page* 164)

"down-time".. is eating into your earnings?



Those who operate Eagle Hammermills and Jaw Crushers are pleased with the speed of replacing wear parts. Interior is quickly accessible. Many parts are reversible or interchangeable for extra service.



And we bend over backwards to speed parts to you —day or night.

It all figures out to less down-time — more profit!

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PULVERIZERS • CONVEYORS • LOADERS

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More Information, Please

CHECK AND MAIL THE CARD BELOW FOR ADDITIONAL INFORMATION ON NEW MACHINERY AND SUPPLIES

1. **The DorrClone.** Bulletin No. 2500. This 16-page bulletin describes the action of a wet cyclone for the classification and separation of materials in slurries, washings, etc. Originally known as the Dutch State Mines cyclone this device has been developed for use in fine size classification, deliming operations, dewatering and similar applications. Diagrams and text point out the action of the DorrClone. Applications and comparisons with other type of wet classifying equipment are given while several pages give data on operating units. The Dorr Company.

2. **Cut Bagging Costs. Auger-Matic Bag Packer.** This folder points out ways in which bagging costs can be reduced by using an automatic bag filler. Diagrams illustrate the construction of the machine while the various features are described in the text. The Auger-Matic is a single spout self-contained unit that can be readily moved to various locations as needed. E. D. Coddington Manufacturing Company.

3. **General Model 220. G-5105.** This folder presents the important features of the new General excavator. One cover shows the various attachments for the machine—shovel front, clamshell, crane, and dragline. The front page is in the form of a letter pointing out the changes that have been made to improve the model. The center spread illustrates the operating machinery and points out the features of it. An insert gives an overall view of the complete line of machines made by the Osgood and the General Excavator Companies, which includes hoes, dragline, cranes, log loaders, shovels and strippers. The General Excavator Company.

4. **What Makes It Tick! Lit No. SP-10.** This 56-page booklet presents the story of the Towmotor fork lift truck. Copious illustrations are used to show the major components of the machine such as drive mechanism, lift mechanism, body, etc. Several pages show typical applications of the Towmotors in varied industries. Three pages show the different models available and give the capacities. Another three pages illustrate the special accessories such as lifting booms, scoops, clamps, unloaders, side shifters, and many other items for special applications. Towmotor Corporation.

5. **Flexco Hinged Belt Fasteners. H F 500.** Hinged belt fasteners are the subject of this folder which shows the use of the fasteners on conveyor belts. Diagrams show the construction of the fasteners while photos illustrate the method of applying the fastener in a step by step series. One page give prices and illustrates the tools needed for applying the fasteners. Flexible Steel Lacing Company.

6. **Continuous Grinding.** Catalog No. 514. This 32-page booklet describes the line of ball, rod and tube mills made by the company. Illustrations and text bring out the important points of the various types of mills and their use. Alloy and non-metallic lining and grinding media are discussed and shown. Tube mills are treated as well as special types such as the jacket, for hot or cold grinding of special materials. Also covered in the booklet are feeders, grinding systems, drives, bearings, gears, discharge grates, metallic and non-metallic liners, grinding media, and accessories. The Patterson Foundry and Machine Company.

7. **Minneapolis-Moline High-Turbulence Power Engines and Power Units.** Bulletin 1026. A 24-page booklet that presents the story of a line of engines and power plants. Typical installations are shown throughout the book. Cut-away views and diagrams show the unique features of the engines while specifications for the various models are included. Accessories for using a variety of fuels are pictured and the advantages explained. Other equipment for special conditions are shown and described. Minneapolis-Moline Company.

8. **The First Fifty Years.** Sixteen pages of this attractive booklet present the history of the Hell Company and illustrate the development of its many products. Drawings supplement the many photos and highlight the changes that have been made during the past half century. Policies, facilities and many other points of interest are brought out. Photos of the machines produced and the factories where they are made add value to this booklet. The Hell Company.

9. **Wooldridge Terra Cobra Model TC-6142.** Bulletin No. 707. The new model Terra Cobra self-propelled scraper is described in this eight page bulletin. Operational features and mechanical details are shown in a series of sectional, cutaway, and assembly views. The bulletin presents the details of the machine in a well illustrated manner while the back page contains the specifications. Wooldridge Manufacturing Company.

10. **Baughman's Model Q-81. Form A-295.** This catalog sheet presents the screw type conveyor and the screw feeding hopper for handling all materials that become fluid or that roll in handling. The features of this type of conveyor are given as well as the general specification. Major components are illustrated. Baughman Manufacturing Company.

11. **Acker Shot Core Drill. Model KR.** Bulletin No. 19. The eight pages of this bulletin illustrate the shot core drill for exploratory drilling. This drill uses chilled shot for the cutting medium and can be used for drilling of well holes in any material or for taking cores for subsurface exploration. In addition to presenting the features of this type of drill the bulletin also shows application photos and lists specifications and capacities for the machine. Accessories and distributors are listed on the back page. Acker Drill Company.

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12. Plymouth Locomotives. Catalog LG-82. This 30-page catalog shows the complete line of Plymouth locomotives. Photographs and specifications of the various models from 3- to 70-tons are given. Included is a section on the operation and advantages of the Hydraulic Torque Converter Drive which is available on most models. Tons of hauling capacity are given for each model for various speeds, grades and frictional resistance. Tables of weights of cars and common materials are given so that frictional resistances can be computed for determining the size of locomotive needed for specific applications. Plymouth Locomotive Division, The Fate-Root-Heath Company.

13. Aeroturn Dust Collectors. A sixteen-page bulletin that covers the line of dust collectors sold under the Aeroturn brand. These collectors are made of pressed felt and feature a self-cleaning blow-ring that dislodges dust from the fabric. Photos and diagrams bring out the novel features of the machine, while four pages show installations in various industries and a list of prominent companies using these collectors. Turner and Haws Engineering Company.

14. Highway Cleanup with Elmco Rockershovels. Bulletin L1023. This four-page folder is done in full color to show the actual application of the Elmco 104 Rockershovel in removing rock slides from highways. This operation is essentially the same as done in sand pits and quarries in loading the blasted material. The special advantage of the Rockershovel in working in a straight line in cleaning operations is pointed out in connection with highway work where traffic must be kept moving. Specifications of the Model 104 are given. The Elmco Corporation.

15. Diesel Power By Cummins Producing Crushed Stone, Agricultural Lime, Sand and Gravel. Bulletin No. 5314. This eight-page bulletin is a picture story of installations using diesel engines manufactured by the company. One page covers hauling units and shows several makes of trucks in quarry service and a diesel locomotive which are powered by these engines. Another page shows a number of makes of shovels and draglines which are diesel powered, while three pages show crushing and pulverizing plants where the power is supplied by diesel engines. Sand and gravel dredging plants where diesel power drives the pumps, are illustrated. The back page shows the three styles of diesel engines for the various types of service and lists the models and general ratings of each. Cummins Engine Company.

16. Konigshorn Drilling Dust Exhauster. This folder illustrates and describes the exhauster for use in cleaning drill holes and preventing dust from contaminating the air in dry drilling operations. Photos show actual use while diagrams point out the operation of the machines. Columbia Technical Corporation.

17. Colprovia Paving Processes for Non-Skid, Cold Laid Pavements. This 14-page booklet describes and illustrates the various types of paving materials made by the Colprovia processes which includes both hot and cold mixes. The illustrations show the different types of mixes in actual use on major highways and streets. A number of unique uses are suggested. Tables cover most of the points of information that will be required for figuring yardages, materials, and costs of projects when the specifications are known. Colprovia Roads.

18. Stop Dust in Rock Crushing Plants, Clay Plants, Slag Plants. Form D5. This folder presents the features of Compound M-200—a liquid diffusion chemical that spreads and diffuses water efficiently. The compound is recommended for use in liquid diffusion equipment for the control of dust arising from processing operations. While dust control is stressed additional uses such as tempering clay, cleaning trucks, spraying driveways, etc., are mentioned. Johnson-March.

19. General Purpose Pumps. Type 33B. Bulletin 2206351R. This six-page catalog insert illustrates the general purpose pumps which are available with capacities to 2500 g.p.m., heads to 550 ft. and operating temperatures to 250 deg. This line of pumps is pedestal mounted and grease lubricated. Stuffing box or mechanical seals may be used. Direct coupling or V-belt drives are listed and the pumps may be obtained in a variety of materials. Many combinations of seals and materials are available. Allis-Chalmers Manufacturing Company.

20. Brake Shoe's AEK Metal. This folder introduces a nickel chrome iron for use in abrasion resistant service. It is especially recommended where abrasion is more important than impact. It is non-machinable and not suggested for use in elevated temperatures. The material is cast and stress relieved. It is being introduced as a money saving item for use in mill liners, slurry pumps, feed spouts, log washers, sand pumps, concrete mixers, pug mills, chute liners, and coal pulverizer rings. This material is an addition to the line of manganese and special steel castings made by another division of the company. Brake Shoe and Castings Division, American Brake Shoe Company.

21. "Hey What Stopped That Engine!" Form 20246. This is a 28-page four-color cartoon type booklet that presents the main facts of small engine maintenance. Cooling, lubricating, air intake and exhaust, and fuel supply are covered. Starting engines, marine gear, generators, cold weather hints and general facts are all treated in an entertaining manner. The cartoon story is an informative way of bringing out points that might be overlooked in the regular type of manual. Caterpillar.

22. Pulverized Materials Flow Like Water. Bulletin FH-2. The eight pages of this bulletin present the facts of the Airslide system of conveying pulverized materials that will flow. Photos of actual installations, drawings of various layouts, and case histories give a fine idea of the use of this system. Fuller Company.

23. Nickel Alloyed Cast Irons. This 28-page bulletin has been compiled to present the characteristics of alloyed cast irons and to illustrate the many uses to which they are put. Charts, tables and photos bring out the important features and properties of nickel-alloyed irons and stress the advantages that result from their use. This bulletin is written primarily for engineers and others who are interested in machinery. The International Nickel Company.

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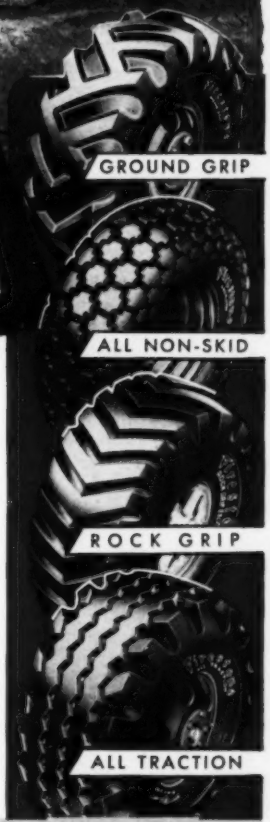

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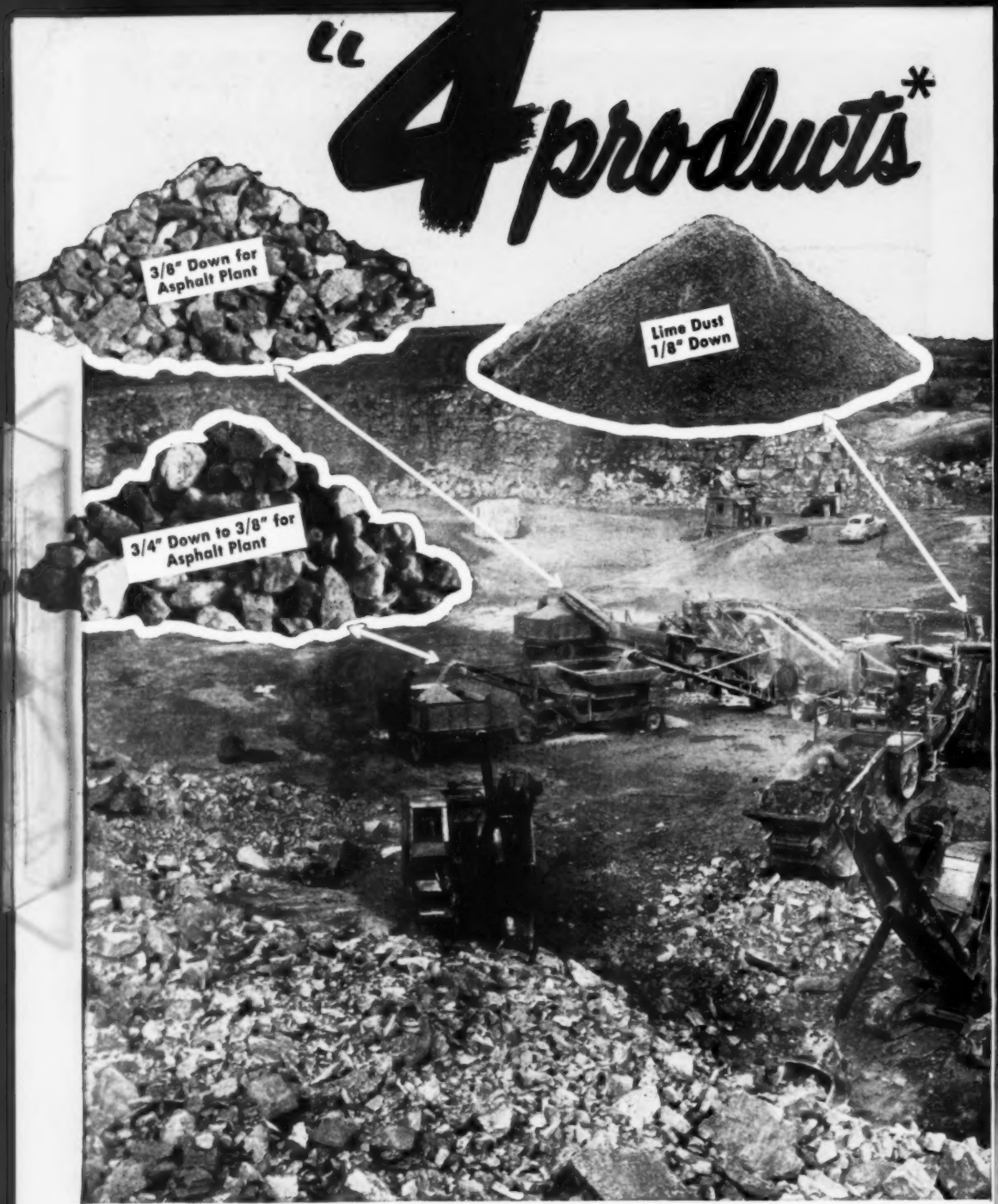


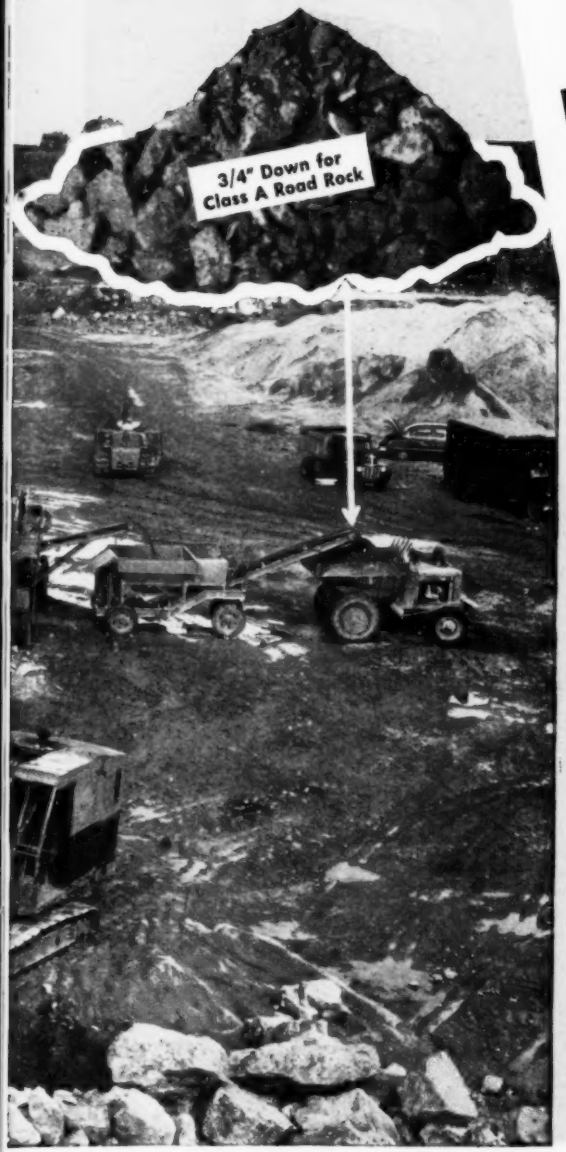
THE IOWA LINE *of Material Handling Equipment Includes:* ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • VIBRATOR AND REVOLVING SCREENS • UNITIZED ROCK AND GRAVEL PLANTS • FEEDERS • PORTABLE POWER CONVEYORS • PORTABLE AND STATIONARY STONE, GRAVEL AND SAND PLANTS • REDUCTION CRUSHERS • BATCH TYPE AND VOLUMETRIC TYPE ASPHALT PLANTS • DRIERS • DUST COLLECTORS HAMMERMILLS • WASHING PLANTS • VIBRATING SOIL COMPACTION UNITS • DOUBLE IMPELLER IMPACT BREAKERS

at a time and 210 TONS PER HOUR

from one of my UNITIZED PLANTS!

That's why I buy CEDARAPIDS"

Says B. L. Anderson
Cedar Rapids, Iowa



*Lime dust from 1/8" down, *3/4" Class A Road Rock for county roads, *3/8" minus and *3/8" to 3/4" aggregate for black top... that's what B. L. Anderson's Unitized Plant is producing *in one operation,* at a rate of 210 tons per hour!

And that's not all! When Mr. Anderson wants to meet specifications for other jobs, the basic units of his Unitized Plant can be combined in any way to produce any size products in volumes up to 250 tons per hour, with real economy in operating costs and maintenance.

Mr. Anderson's Unitized Plant illustrated here consists of a 2236 Primary Unit, a Screening Unit with 4' x 12' Horizontal Screen, a 4033 Hammermill Secondary and four Portable Bins. The rock crushed for black top is being mixed in a Cedarapids Model ECW Asphalt Plant operating at the same location. B. L. Anderson also has two other quarry operations each using 2236 Portable Primaries and 4033 Hammermill Secondaries.

More and more contractors are insisting on the advantages of Cedarapids equipment... single units or complete portable plants... to meet today's stepped-up demands for low-cost aggregate and black top. Your Cedarapids distributor can give you *all* the reasons why... ask him for full details.

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U.S.A.

GM Diesel
Case History No. 5011-27

USER: Thomasville Stone and Lime Company, Thomasville, Pennsylvania

INSTALLATION: 3-71 and 6-71 GM Diesels power Joy Heavyweight Champion blast hole drill; 3-71 for rotary and propulsion, 6-71 on compressor and "pulldown."

PERFORMANCE: Replaced 5 small drills. Maximum footage with previous equipment 15 feet per drill in 6¼ hours; with new equipment 180 feet in 6¼ hours. Reduces drilling manpower. Fuel consumption: less than 7 gallons per hour (both engines).

This Diesel replaces five drills

—and more than doubles the footage

It pays to Standardize on

GM
DIESEL POWER

Crushed Stone Boom

(*From page* 150)

ing sets supply power for operating the vibrating screens and belt conveyors. Much of the material produced is placed in stockpiles with a third Euclid truck which is used exclusively for this purpose. A Haiss loader is used for reclaiming. Only a relatively small amount of by-product agricultural limestone is produced and marketed.

Officials of the Rogers organization are Ralph Rogers, president; Harry Berry, vice-president and general manager of the company's Tennessee operations; and Wayne K. Sowers, secretary-treasurer. Kenneth Wysong is chief engineer and was largely responsible for the design of the Hillsboro plant. Brannon Reynolds is plant manager.

Warren Limestone Company

This company opened a new deposit at McMinnville in 1945, after a 5-year stretch of producing agricultural limestone at Jamestown, Tenn. Recovery operations have been underground right from the start. Rooms and pillars are both 50 ft. square, and the working face is about 30 ft. high.

Shortly before we visited the McMinnville plant, its owners bought out a competitive firm, the Pearsall Lime & Stone Company, which was operating on adjacent property. During the winter it is planned to combine the two plants and to shift operations entirely to the former Pearsall mine, which had the advantages of being dry and containing no flint to cause excessive wear.

Drilling will be done with a Joy Hydro-Drill jib mounting a TM-350 drill. Two Joy portable compressors, a WL-60 and a WL-80, are now available, and the company has just purchased a new WN-102 unit with a capacity of 673 c.f.m. Two ¾-cu. yd. electric shovels, one a P&H and the other a General, will be used to load trucks in the mine.

In combining the facilities of the two plants it is planned to install a new Pioneer No. 171 stationary primary unit, consisting of a 3- by 12-ft. triple-chain apron feeder and a 20- by 36-in. jaw crusher. The product of the primary crusher will be conveyed to a 4- by 10-ft. Simplicity scalping screen mounted on top of a 21-cu. yd. steel surge bin. Oversize will be fed from the bin, by means of a reciprocating feeder and a short belt conveyor, to a New Holland Model 3030 double-impeller breaker.

Material from the impact breaker will be conveyed to a Pioneer 4- by 12-ft. triple deck gradation

Mrs. Ralph DePalma, secretary, and Fred Fleming, vice-president and plant manager of the Cedar Grove Lime Co.

screen mounted on truck bins. A portion of the oversize will be returned from the screen to the breaker for closed-circuit crushing. There will also be side ports in the delivery bins feeding onto belt conveyors which will discharge into a Gruendler 3XB center-feed hammermill and a Pioneer 40- by 22-in. triple-roll crusher. The latter units will also operate in closed circuit with the gradation screen.

With these facilities the company expects to produce from 1,200 to 1,400 tons per 8-hr. day of all sizes of material. About 12 men will be employed in direct production work, and an additional 10 men will be required for delivery operations. In addition to dump trucks used in the mine and for deliveries, the company operates six spreader trucks in connection with its extensive agricultural limestone business. The Warren Limestone Co. is owned and operated under a partnership agreement between Edgar McDonald and H. B. Smith.

Porter Brown Limestone Company

The Porter Brown Limestone Co. has been identified with the crushed stone business in Middle Tennessee since 1930, when a small plant was built at Springfield, mainly to produce agricultural limestone. The company's first modern closed-circuit plant was built at Springfield in 1944. It is still in operation, and produces at the rate of about 150 t.p.h.

In August, 1951, this company completed the installation of a new and exceptionally well equipped plant at Smyrna, Tenn., primarily to supply materials for a new section of U. S. Highway 41 from that city to Murfreesboro. Two lanes of pavement are under construction at the present time, but eventually two additional lanes will be built to complete the project.

Drilling equipment includes a Joy and an Ingersoll-Rand wagon drill, a Joy WL-80 Model 100 Unitair compressor, truck-mounted Sullivan WK-60 compressor, and an Ingersoll-Rand Model 315 portable compressor. Three 10-ton Euclid quarry-type trucks are loaded at the working face with a 1½-cu. yd. Northwest shovel.

The primary plant unit is a Pioneer 173 stationary installation consisting of a 3½- by 14-ft. apron feeder and a 30- by 42-in. jaw crusher. The crusher discharges onto a 36-in. wide by 130-ft. long inclined lattice-frame conveyor which delivers the stone to a 5- by 14-ft. double-deck Pioneer Mesabi-type scalping screen. This screen, with which crusher-run and one other size of material can be taken out as desired, is mounted above a two-compartment 75-ton capacity combination surge and delivery bin.

Oversize stone goes directly from the scalping screen by gravity chute into a Pioneer 54- by 24-in. double-roll crusher. Both the crusher and a Pioneer 30G reciprocating feeder under the surge bin discharge onto a 36-in. wide by 130-ft. long inclined belt conveyor. A box located under the head pulley of this conveyor is equipped with Siamese spouts and a hinged gate so that the flow of stone can be split between two 4- by 12-ft. triple-deck Pioneer vibrating screens mounted over delivery bins. Oversize from one screen goes by gravity chute into a Symons 4-ft. short head cone crusher, while another gravity chute directs oversize from the second screen to a small wooden bin from which a Syntron vibrating feeder supplies a Williams NF-50 pulverizer. Separate 30-in. by 60-ft. Pioneer conveyors return recrushed stone to a blending box mounted over and discharging onto the conveyor which feeds the gradation screen, thus creating parallel closed circuits.

The delivery bins consist of four 21-cu. yd. steel units equipped with side boards and side ports through which stone can be withdrawn onto a 24-in. channel-frame conveyor for special recrushing. Two other 24-in. belt conveyors, one a lattice-frame unit 80 ft. in length, permit stockpiling two sizes of materials directly from the bins without rehandling.

The Porter Brown plant at Smyrna has averaged better than 200 t.p.h. when making minus ¾-in. special stabilization stone, and 300 t.p.h. when producing 1⅞- to 3-in. stone. Specifications for the stabilization material call for 40 percent minus ¼-in., of which 5 to 15 percent must be minus 200-mesh. The

hammermill was placed in the circuit in order to make the necessary percentage of fines.

It is believed that this plant will be dismantled when the highway construction project has been completed, but it has already supplied quantities of materials for other uses, including a portion of the stone for Seward Air Base in Smyrna and for a housing project in the same city.

The company is a partnership. It was founded by Porter Brown Sr., whose five sons now operate the business. Paul is general manager of the company; Porter Jr. manages the plant at Springfield; Carl manages the Smyrna plant; Charles takes care of hauling, bulldozing and excavating work; and Loy operates the machine and repair shops at Springfield.

Columbia Rock Products Corp.

Columbia Rock Products Corp. was formed in 1941 to work a newly-opened deposit near Columbia, Tenn. Last summer, after ten years of open quarry operations, the company began development work on a room-and-pillar mining system in order to dispense with costly stripping work and to obtain cleaner stone. Stone in the deposit contains less than ½ of 1 percent silica, and the calcium carbonate equivalent runs in excess of 99 percent.

The rooms are 50 and the pillars 40 ft. square, and the working face is about 20 ft. high. Two Joy Hydro-Drill jibs equipped with T-400 drifters are used in the underground operations, and a new Joy WN-102 stationary compressor with a capacity of 673 c.f.m. has just been set up. Loading is done with a ¾-cu. yd. Lorain L-41 diesel shovel, and the 1,500-ft. haul to the primary crusher is made with two 15-ton Euclid trucks.

Primary crushing is done with a 30- by 42-in. Pioneer jaw fed by a 42-in. by 14-ft. apron feeder. A 30-in. wide by 85-ft. long inclined lattice-frame conveyor delivers the stone to a 4- by 8-ft. double-deck scalping screen which is mounted over a 100-ton surge bin. A separation is made at 4-in. (only one deck of the screen is used), and the oversize goes by gravity chute into a Dixie Mogul 3650 hammermill. Minus 4-in. stone is taken from the surge bin by a Pioneer Model 30R reciprocating feeder and placed on a 36-in. wide by 120-ft. long inclined belt conveyor which discharges over a 4- by 12-ft. triple-deck Pioneer screen. Two sizes of material are taken out at this point, while the oversize is split and fed to a 40- by 22-in. Pioneer triple-roll crusher and to a Gruendler 3XB hammermill. Stone is returned from the roll crusher to the 4- by 12-ft. screen, while there is a separate 3- by 8-ft. double-deck Telsmith screen for the hammermill product. This circuit is so arranged that the hammermill can be eliminated and the entire feed sent to the roll crusher.

The product of the Dixie hammermill is conveyed to a 4- by 10-ft. double-deck Simplicity screen for sizing, and the rejects are returned to the 36-in. conveyor which handles material out of the surge bin. If necessary, the stone can be re-screened and further cleaned by returning material from the 4- by 12-ft. triple-deck screen to a 4- by 8-ft. double-deck unit which is not required in the regular flow sheet.

The plant is well equipped for wet recovery of manufactured sand. Feed for this operation is hauled by truck from bins at the main plant to an entirely separate sand washing plant. This setup includes a 4-cu. yd. supply hopper over a reciprocating feeder, a 24-in. by 65-ft. belt conveyor, a 4- by 12-ft. drag-type Pioneer dehydrator, and an 18-in. diameter by 20-ft. long screw classifier for recovering mortar sand. Waste water flows by gravity through 8-in. pipe lines to two one-acre settling ponds adjacent to the plant. Water is pumped from a nearby creek with a 3- by 2-in. Allis-Chalmers highspeed pump. Water demand is approximately 450 g.p.m. and the capacity of the plant is about 40 t.p.h.

Although there are nine 40-cu. yd. bins in the plant proper for storing finished materials, most of the output is stockpiled and reloaded into trucks and railroad cars for delivery. A ¾-cu. yd. Lorain SP-254 self-propelled rubber-tired shovel is used for reclaiming. Twelve sizes of material, including sand (but not agricultural limestone), are regularly stockpiled.

The Columbia plant produces sized stone at the rate of about 125 t.p.h. Agstone output of about 30 t.p.h., and stone sand production of 40 t.p.h., are in addition to this figure. In the near future the company plans to increase capacity to about 250 t.p.h. by rebuilding and rearranging the portion of the plant beyond the surge bin. An additional double-roll crusher and two additional vibrating screens will be installed so that it will be possible to produce as many as ten sizes of stone simultaneously. It is also planned to install ten 40-cu. yd. steel bins to replace the present wood structures.

Officers of Columbia Rock Products are as follows: Wayne Pressnell, president; Harry Pressnell, vice-president; and W. C. Fraser, secretary-treasurer. Carl Ashton is plant superintendent, and W. J. Davis is bookkeeper. In addition to its crushed stone operations, the company mines considerable quantities of crude phosphate matrix on its 370-acre deposit.

Bilbrey Lime Company

The Bilbrey Lime Company's present plant was established in Murfreesboro in 1949; but for six years before the company had operated a considerably smaller plant which it had purchased intact. J. Addison Bilbrey, owner of the company, had operated a successful automobile agency in Livingston, Tenn., before the war, and his interest in the crushed stone business came about as a result of the fact that after Pearl Harbor there were no cars to sell.

Overburden on the 21-acre property consists of a mixture of rock and dirt, and ranges from a bare trace to a maximum of about 5 ft. The deposit is worked in 16-ft. lifts, and the drilling is done with a Sullivan and a Gardner-Denver wagon drill, using air supplied by a 315-c.f.m. Ingersoll-Rand portable compressor. Delay caps are used in all primary blasts to assure maximum fragmentation.

The stone is loaded at the face with a Lorain 1-cu. yd. diesel-powered shovel, and the short haul to the plant is made with one 15-ton Euclid truck and one 7½-ton Dodge truck. These units dump the stone into a hopper over a 36-in. by 12-ft. Universal apron feeder which delivers the material into a 20- by 36-in. Cedarapids jaw crusher. Both the feeder and the crusher are driven by an International diesel engine.

The stone drops from the primary crusher onto a 24-in. wide Cedarapids lattice-frame inclined belt conveyor which discharges into a surge bin built of 8- by 8- by 16-in. concrete masonry units. A 30-in. Austin-Western reciprocating feeder below the surge bin feeds to a 30-in. wide by 100-ft. long inclined belt conveyor, and this in turn delivers the stone to a 4- by 12-ft. double-deck Cedarapids vibrating screen mounted above the truck bins.

Rejects from the screen go by gravity chute into a No. 4 Universal hammermill, and the circuit is closed at the 30-in. conveyor by means of a short run of 24-in. conveyor. A second, and much smaller, pulverizing unit is used for making manufactured stone sand. It is fed

from the second deck of the sizing screen by means of an 18-in. by 14-ft. belt conveyor, and its product drops onto an 18-in. by 75-ft. conveyor which delivers the flow to a 3- by 8-ft. single-deck Bonded Scale screen. The product is placed in a separate bin and hauled by truck to a bucket elevator which feeds an 8-ft Raymond separator mounted over a bin.

The average output of the Bilbrey plant is about 700 tons in an 8-hr. day, with agricultural limestone and manufactured sand accounting for about 15 percent of the total. Twelve men are employed in production, and all deliveries are handled by contract haulers. This winter the company plans to install a Barber-Greene stockpiling conveyor to eliminate the trucking expense now incurred in connection with stockpiling finished materials. It is also planned to install a 30- by 42-in. primary jaw and a 36-in. belt conveyor in lieu of the present 20- by 36-in. primary and 24-in. belt at the primary.

Cedar Grove Lime Company

The Cedar Grove Lime Co. was organized in 1948 to work a deposit at Pulaski originally opened in 1939 by the Richland Lime Company. An entirely new plant was built to produce road stone, concrete aggregates, agricultural limestone, and manufactured stone sand.

The original quarry, which has virtually no overburden, has a maximum face of 60 ft. which is worked in 18-ft. lifts. The stone is nonabrasive, and fragmentation is generally excellent. Blast holes are put down with a 4-in. Ingersoll-Rand wagon drill, and the stone is recovered with a ¾-cu. yd. Northwest diesel-powered shovel. Depending upon the section of the quarry being worked, two or three Ford F-8 trucks with 6-cu. yd. dump bodies are used for feeding the plant. A new quarry which the company opened not long ago has a fair amount of overburden, but there is sufficient stone mixed in with other materials to make it economical to run the strippings through the plant.

The plant proper is balanced to a 30- by 42-in. primary jaw crusher, although a 20- by 36-in. jaw is actually used. At the time the plant was built, it was felt that the market could readily be taken care of with the approximately 100 t.p.h. output of the smaller primary crusher, but the design of the remainder of the plant was based upon a larger primary unit on the theory that this provision would make it possible to double capacity some day with only a relatively small outlay of additional capital. So far it hasn't been necessary to make the change, but the over-design of all equipment beyond the primary crusher has yielded several important operational advantages.

Stone drops into the primary crusher from a 3- by 12-ft. Pioneer apron feeder, and a 30-in. channel-frame belt conveyor elevates the material to a 4- by 8-ft. double-deck scalping screen mounted over a 200-ton surge bin. Gradation screening is done with two 4- by 12-ft. triple-deck Pioneer units fed by a 30-in. wide inclined belt conveyor. A Pioneer 40- by 22-in. triple-roll crusher, and a Dixie Mogul hammermill, are arranged in closed circuit with these screens, the two 24-in. return conveyors terminating at a blending box over the main 30-in. conveyor.

Finished materials are stored in five 75-ton bins located below the sizing screens, and subsequently hauled by truck to stockpiles. Reclaiming is by means of a Haiss loader. Stone sand is produced by trucking fines from one of the bins to a separate plant located on the property. The minus 3/16-in. material is fed from a hopper by belt conveyor to an 8-ft. Raymond separator which takes out everything finer than 100-mesh, and the fine product is marketed as fertilizer. Productive capacity of the sand plant is approximately 25 t.p.h.

At the present time agricultural limestone is strictly a by-product of the Cedar Grove plant, although output of the material at times runs as high as 200 tons per day. The company operates three Baughman spreaders for making deliveries, and in addition sells the material directly to a number of contract spreaders. Some thought has been given to the installation of a center-feed hammermill which would make it possible, at need, to reduce half of the total output of the plant to agstone.

Including the quarry crew, seven men are employed in direct production at the Cedar Grove plant. W. K. Jones is president of the company and Fred Fleming is vice-president and plant manager. The firm sells about 100,000 tons of stone in an average year.

Conclusions

We are not at all certain that valid specific conclusions may be drawn from a study of capacity expansion in so large an area as Middle Tennessee, and even the broad generalities in which we might indulge entail considerable risk of error. We are inclined, however, to believe that the area could very probably have supported a network of permanent, well-equipped plants some time before most of the installations were actually made. Although the liming program appears to have touched off the plant construction boom, none of the operators in the territory is today dependent upon agstone sales to remain in business. Although the tremendous market for construction materials created by World War II formed the immediate pretext for the establishment of a number of the new plants, the newcomers didn't fold up with the return of what might be called normal times, but on the contrary in many instances expanded their operations.

In short, we find it hard to believe that special circumstances, unique to Middle Tennessee, are in any large measure responsible for the tremendous expansion of the crushed stone industry in that locality. Booms which are wholly predicated on special, non-repeating phenomena have a way of collapsing sooner or later, whereas the stone industry in Middle Tennessee now appears to be on a sounder basis than at any time in its history.

Such similarities as are evident in equipment selections and streamlined plant designs can no doubt be attributed largely to the general similarity of operating conditions, and to the fact that the entire development has occurred during a relatively short span of years. Almost without exception the plants have been designed and equipped for long-term operation rather than with a view to quick profit making, and there is a complete absence of the baling wire, patch-work type of setup which is still to be found in other sections of the country. Indeed, under the keenly competitive conditions that exist, it is doubtful if any sort of plant except an efficient, well-designed one could survive for long.

Knowles Associates, Chemical, Metallurgical, Mechanical Engineers, 19 Rector Street, New York 6, N. Y., announce the retirement from the partnership of R. C. Ried. The remaining partners, C. L. Knowles, R. Chelminski, and O. R. Kuster, are continuing the business.

The Harry T. Campbell Sons' Corporation, Towson, Md., has announced the opening of new offices in the Campbell Building, 100 West Pennsylvania Avenue, Towson 4, Md. The Campbell firm produces agricultural limestone, crushed limestone, crushed granite, ready-mixed concrete, and sand and gravel.

A.S.T.M. Committees On Cement, Concrete Convene at Purdue

THE Purdue University campus was the scene on October 24-26 of the combined 1951 Fall meetings of A.S.T.M. Committees C-1 on Cement and C-9 on Concrete and Concrete Aggregates. Through special arrangements, meeting rooms were provided at the Purdue Memorial Union in addition to hotel accommodations. Both groups expressed their pleasure in meeting at one of the country's great universities.

Officers of Committee C-1 are as follows: chairman, R. R. Litehiser, Ohio State Highway Testing and Research Laboratory, O.S.U. campus, Columbus 10, O.; and secretary, W. S. Weaver, Canada Cement Company, Ltd., Phillips Square, Montreal 2, P. Q., Canada.

The following men head Committee C-9: chairman, K. B. Woods, Purdue University, Civil Engineering Bldg., W. Lafayette, Ind.; secretary, Bryant Mather, Waterways Experiment Station, Jackson, Miss.

Notable progress is being made in subcommittee work on many important projects. A brief resume of the reports presented is made in the following paragraphs.

Committee C-1 The Cement Reference Laboratory reported on the completion of inspection trips made through New England, New York, and Canadian laboratories. There is an encouraging prospect that standard samples of cement for chemical analysis purposes will be made available shortly, these samples to be in lots of three 10 g vials.

A revision of the flame photometry test method (C 228T) is being studied with the objective of approving several types of flame photometers for use with this method.

A reduction of the solution concentration and elimination of the lime content in the zero standard is also being considered. Cooperative tests are now being conducted to establish a better method for removing manganese.

Accelerated alkali reactivity tests are being conducted for possible revision of the tentative test method (C 227T). Concern had been expressed, previous to the meeting, over difficulties in certain states of the acceptance of the autoclave apparatus as used in ASTM method C 151. Work on this problem is in progress looking toward having the equipment recognized for the use intended by boiler code authorities and insurance companies. A report is in preparation which will present data on autoclave expansions of a large number of cements, and length changes of the cements in neat cement and 1 to 2 mortar prisms during storage in water and in air for periods up to 10 years. A large amount of data has been collected on the subject of sulphate resistance, including a review of the latest co-operative series of tests involving 17 laboratories and 13 cements. A proposed test method will now be prepared for information purposes, using the lean mortar bar procedure. A quick method for determining resistance of sulphate action will also be written for information purposes based on a co-operative series using sulphate susceptibility tests on the same cement.

A complete report on the investigation on heat of hydration will be presented at the time of the Spring meeting of the committee. In the study of bleeding characteristics, the results of a co-operative series involving ten laboratories will now be tabulated for the committee. A mechanical mixing procedure will be included in the report, and a new series of tests is planned involving three cements using new apparatus just completed. Several methods are being considered to measure workability. A need was expressed for clarification of the requirements for fineness; and a co-operative series of tests will be made to establish data. A need was also expressed for a method using the Lee Nourse apparatus which is used for research work, especially on cements other than portland.

Two proposed methods for measuring strength of hydraulic cement mortars have been prepared for circulation and comment of the committee. These involve flexual strength of mortar and a compression strength using portions of specimens employed in the flexure test. The proposed method of determining the presence of calcium sulphate in hydrated portland cement mortars reported at the last meeting is now being tried out by producers, and it is urged that more reports are needed on these trials. Closer requirements on the apparatus for measuring air content of hydraulic cement mortars (C 185 T) has been discussed, and co-operative tests among 11 laboratories to establish the proper revisions to be made are expected to be completed at the time of the Spring meeting.

Proposed revisions of the specifications for portland cement (C 150 and C 175 T), recommended at the last meeting, which subsequently were referred back to the committee by the Administrative Committee on Standards due mainly to the lack of opportunity for review of the negative comments, were reaffirmed upon recommendation by the Sponsoring Committee on Portland Cement. These revisions pertain to inclusion of Blaine air permeability test fineness requirements and the elimination of the initial time of set requirements. These revisions will again be submitted to the Society, and investigation will now be made to establish the need for the two fineness methods referred to in the specifications. At the next meeting results are expected on tests being conducted on hand- and machine-mixed masonry mortars.

A change in the natural cement specifications (C 10 T) was approved for letter ballot, which will now specify the Vicat time of set method (C 191 T) to be used with the same limits as now specified.

Minor revisions in the proposed specifications for fly ash and for fly ash portland cement were reported as a result of co-operative series of tests involving five laboratories and 25 samples of fly ash. Further tests involving 25 samples are still under way.

A proposed specification of pozzolanic materials was reported under preparation.

Committee C-9 Final approval on a proposed tentative method of testing to determine chemical reactivity of aggregates by chemical methods is expected at the Spring meeting of the committee. At least two papers are being planned on chemical reactivity for inclusion in a symposium to be presented at the 1952 annual meeting on the durability of concrete.

A. D. Conrow presented a brief progress report on variations in expansion of mortar bars.

The method of determining the fundamental torsional frequency of concrete has been agreed upon for inclusion in the A.S.T.M. sonic method (C 215 T).

A proposed method for petrographic examination of aggregates for concrete will be distributed for information.

A proposed method for center-point loading in the flexure test (C 192) for beams other than the flexure test specimens is being considered. This will include beams such as those used in the freezing-and-thawing tests.

A complete revision of the Standard Method of Sampling Fresh Concrete (C 172) is contemplated, but no details are noted at this time.

Revisions of the Standard Specifications for Concrete Aggregates (C33), which had been submitted to letter ballot of the committee, were reviewed in the light of negative comments received. These revisions involve setting up specific limitations instead of those requiring the user to set limitations to meet local conditions. Agreement was reached on some items, but most of the revisions were referred back to the subcommittee for further consideration. It was agreed to eliminate the mortar strength requirement on fine aggregate, and there was a question as to the need for soundness requirements of fine aggregate.

Due to considerable negative comments on the proposed tentative specifications for aggregates for lightweight concrete, circulated at the last meeting, an entirely new approach will be made in the revision of this specification by the subcommittee. This approach will be based on performance requirements of aggregates, in addition to grading and other quality requirements.

The present Method of Test for Water Retention Efficiency of Methods for Curing Concrete (C 156 T) will be revised in terms of limiting its coverage to liquid membrane-forming compounds and paper sheets. Reproducibility of test results will be checked preliminary to the writing of specifications for these materials.

A draft of a proposed specification for fly ash admixtures was reviewed by the subcommittee, and further revisions were recommended. This review included considerable data collected by co-operative tests on 20 fly ash samples. It was noted that no consideration had been given to the effect of fly ash on the air content of concrete, and this will be studied further. The subcommittee is considering the addition of a sampling method to the Tentative Method of Testing Air-Entraining Admixtures for Concrete (C 233 T), based on an existing A.S.T.M. method for sampling petroleum (D 270 T).

The first co-operative test series to establish data for preparing a method to measure the resistance to abrasion of concrete will be made using the shot blast apparatus. A question of considerable importance arising from discusion of this type of test is what to measure as the depth of skin or surface of the concrete. Other apparatus will be evaluated following this initial series. Specimens will be prepared using the same cement and aggregate.

The new subcommittee on methods of testing and setting time of concrete reported that considerable research is necessary due to the lack of availability of suitable apparatus. Various types of physical tests will be studied for their relationship including triaxial, flexure, tension, and other properties. In attempting to establish a standard method of freezing and thawing tests, a subcommittee is now considering initially the development of three proposed methods involving rapid freezing and thawing in air, in water, and in brine, respectively. Later consideration will be given to a method involving slow freezing in air and thawing in water.

Both Committees C-1 and C-9 will meet during A.S.T.M. Committee Week in Cleveland, March 3-7, 1952, and at the 50th Anniversary Annual Meeting in New York City, June 23-27, 1952, when a symposium will be sponsored by Committee C-9 on factors affecting durability of concrete.

Other Non-Metals Review

(*From page* 136)

by 3 percent in 1948. Total output showed an 11 percent increase over the total tonage reported in 1949, according to reports by producers to the U. S. Bureau of Mines. The total was 9,168,024 tons. The expansion of the national economy in general and the increased activity in the refractory and construction industries in particular, were for the most part of the governing factors effecting increased fire clay output in 1950. Of the 17 principal fire clay producing states only three (Arkansas, Tennessee, and Washington) reported decreases; the remaining 14 states reported increases. Ohio led with an output of 2,506,306 tons, valued at $6,171,413.

The principal uses of fire clay in 1950 were consumed as follows: refractories—5,147,667 tons (7 percent increase over 1949); heavy clay products—4,020,357 tons (17 percent increase over 1949). Refractories and heavy clay products combined used 96 percent of the total tonnage output in 1950.

Type, quality, and geographical location determine for the most part the selling price of crude fire clay. The average value of fire clay sold or used (crude and prepared) was $3.00 per ton, as compared with $2.91 in 1949.

Ball Clay Sales of ball clay in 1950 broke all previous records, both in tonnage and value, as reported by producers to the U. S. Bureau of Mines. The increase over 1949 was 30 percent each for tonnage and value; there was a 9 percent increase over 1948, the previous high, in volume. Production was 324,444 short tons, valued at $3,980,167.

Tennessee for the eighth consecutive year has been first in output—57 percent of the total United States—and Kentucky was second with 33 percent.

In 1950 the average value per ton for ball clay as reported by producers to the Bureau of Mines was $12.27, as compared with $12.31 for 1949 and $11.18 for 1948.

Kaolin The 1950 domestic production of china clay or kaolin was the largest in the history of the industry, according to reports of producers to the U. S. Bureau of Mines. The increase was 12 percent in tonnage over the previous record year of 1948, and 24 percent increase over 1949. Total output in 1950 was 1,750,858 short tons.

Eleven states made shipments of kaolin in 1950, as compared with 10 in 1949, Nevada being added in 1950. As has been the case for a number of years, Georgia ranked first with 70 percent of the total; South Carolina was second with 20 percent; and Pennsylvania was third with 4 percent.

In line with the trend for the past several years the paper, rubber, pottery, and refractory industries were the principal consumers.

The average value of domestic kaolin sold or used as reported to the Bureau of Mines in 1950 rose to $13.68, as compared with $13.43 for 1949 and $12.59 in 1948. Imports of kaolin for 1950 (122,974 short tons) increased 59 percent over 1949, although this amount represented only 7 percent of the total domestic consumption in 1950.

Natural Abrasives No figures are yet available on natural abrasives production in 1951. In 1950 domestic production sold or used by producers in the United States was as follows:

Natural Abrasives Sold or Used by Producers, 1950

Types	Short Tons	Value	Percent of Change in 1950	
			Short Tons	Value
Tripoli	43,720	$1,173,647	+71	+70
Quartz	160,508	706,724	+49	+49
Ground sand and sandstone	750,673	6,462,503	+23	+23
Grindstones	4,435	230,462	— 1	— 6
Pulpstones	33	2,100	+18	+ 6
Millstones		11,300		+20
Tube mill liners	1,523	62,535	+31	+33
Grinding pebbles	1,923	53,007	—19	—17
Pumice and pumicite	719,356	2,661,052	+0.5	+12
Garnet	9,304	793,558	+41	+57
Emery	5,949	75,308	+21	+24

Dimension Stone The output of dimension stone (exclusive of slate) sold or used in the United States in 1950, as reported by producers to the Bureau of Mines, totaled 1,859,200 short tons, valued at $58,464,183, an increase of 15 percent in quantity and 13 percent in value, as compared with 1949. This total includes all dimension stone—blocks or slabs of natural stone, most of which are cut or trimmed to definite shapes and sizes—sold or used for rough construction, cut stone, slabs, mill blocks, rubble, monumental purposes, paving blocks, curbing, etc.

Sales of dimension stone used as building stone amounted to 15,993,810 cubic feet, valued at $36,664,997, an increase of 35 percent quantity-wise and 23 percent in value. Rubble, also classed as a building stone, but not included in the above total for dimension stone, decreased 27 percent in quantity and 13 percent in value, as compared with 1949.

Memorial stone production, an important branch of the granite and marble industries, declined in 1950. Sales of stone for monumental purposes amounted to 2,962,830 cubic feet, valued at $17,824,882, as compared with 3,125,300 cubic feet, valued at $18,757,859 in 1949.

Paving block sales showed percentage increase of 26 and 87 respectively, in number and value.

Curbing sales amounted to 950,040 cubic feet, valued at $2,429,816, representing an increase of 29 percent in quantity and 44 percent in value, as compared with 1949, while sales of stone for flagging increased 28 percent in volume and 35 percent in value.

Slate The domestic output of slate in 1950 was considerably higher than in 1949. According to figures compiled by the Bureau of Mines from reports furnished by slate producers, total production reached 930,370 short tons, valued at $15,047,481. These totals represent gains of 26 percent in quantity and 24 percent in value.

Sales of roofing slate during the year amounted to 197,570 squares (181,490 squares in 1949), valued at $4,098,842 ($3,759,564 in 1949.) The average value per square in 1950 was $20.75—4 cents per square higher than in 1949. Gains were registered in each of the roofing-slate-producing centers except Vermont and Maine, where the output declined slightly.

The mill-stock branch of the industry made much larger gains, output reaching a higher level than in any recent year. Sales of mill stock were valued at $2,130,430—an increase of 23 percent over 1949. Electrical slate, structural and sanitary products, and blackboards and bulletin boards, the three principal outlets for mill stock, all made substantial gains both in quantity and value, as compared with 1949. Grave vaults and covers, billiard-table tops, and school slates, the three minor categories, declined considerably below the 1949 level.

Flagstones, including slate used for walkways, stepping stones, and miscellaneous uses, gained 55 percent in quantity and 47 percent in value.

Nodulizing Process

(*From page* 152)

production that is *in addition* to the "capacity" increases indicated above. The total increase in clinker output since adding the fifth kiln and nodulizing system has averaged 29½ percent.

The original, complicated dust-pugmill system, with its high maintenance costs, has been eliminated. The present dust nodulizing installation requires only 55 to 60 percent of the connected horse-power involved in the original dust disposal system.

Cement Review

(*From page* 128)

Puerto Rico The Puerto Marine Corp. of Puerto Rico, which late in 1950 took over the plant of the former Puerto Rico Cement Corp., recently announced that it will build a cement storage and bagging plant at Port Everglades, Fla. Cement would be transported in bulk bin ships and pumped to the silos. During 1951 this organization is reported to have shipped many hundreds of thousands of bags of cement into Florida.

Riverside The Riverside Portland Cement Company in 1950 completed extensive improvements to both of its plants, at Crestmore and Oro Grande, Calif. In 1951 the first phase of a new expansion program to cost $2,733,000 was completed at the Oro Grande plant, including 8 new cement storage silos with a capacity of 100,000 bbls. Two new kilns, two raw mills and a new mill in the clinker grinding department are to be added. A long-term improvement program for the plant at Crestmore is also contemplated.

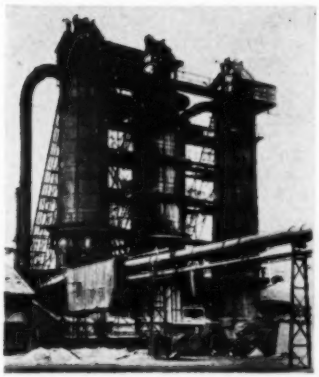
St. Mary's The St. Mary's Cement Co. Ltd., St. Mary's, Ont., in 1951 started a 4-year program of improvement which will increase the capacity of the plant from 660,000 to 2,100,000 bbls. annually by the end of 1952. A new crushing plant was completed in October which included a 48- by 60-in. Traylor crusher and a C-15-50 Pennsylvania Impactor in closed circuit. Under construction for completion in 1952 is a new raw-grinding department including three 800-hp. Smidth Unidan mills and other equipment. Also being installed is a new 10-ft. 6-in. by 350-ft. Smidth kiln. In the clinker grinding department two 700-hp. ball mills are being installed which are in closed circuit with air separators.

South Dakota The South Dakota Cement Plant at Rapid City, S. D., which in 1949 was doubled in capacity, further improved its operations in 1951 by the installation of two Buell stack dust collectors. Future plans call for for a $40,000 stack for the new kiln.

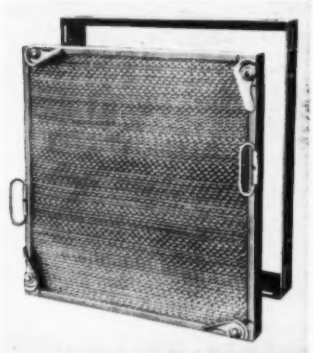
Spokane The Spokane Portland Cement Company made fairly extensive changes in its plant at Irvin, Wash. during 1949 and 1950 but these were insignificant compared to the program now reported under way. Capacity is being doubled to 1,300,000 bbls. annually at a cost of $3,500,000. The program will include the installation of a new 10- by 310-ft. rotary kiln, rock driers, dust collectors and other equipment and various other departments and buildings will be improved or expanded.

A Review of

New Equipment Developed in 1951



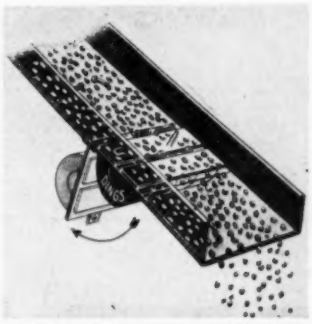
HOLBECK CORPORATION, LTD. 80 Richmond Street, West, Toronto 3, Ont., Canada is distributing the "Priest Shaft Type Lime Kiln." This kiln is widely used in Europe because of its low fuel cost, water-cooled replaceable burners, and low maintenance. The kiln will use natural gas, blast furnace gas, coke oven gas, producer gas, propane, or fuel oil alone or in combination. Controls are automatic except for the periodical drawing of the burned lime.



AMERICAN AIR FILTER COMPANY, Louisville, Ky., brought out a high-velocity air filter of fine mesh wire. The wire is so arranged that a series of tapering corrugations are formed. A filter adhesive traps the dust which is removed by washing the screen and re-coating with adhesive. These filters are designed to operate at velocities up to 500 f.p.m.

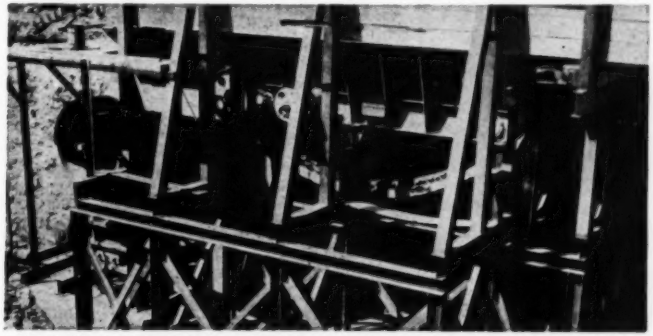
AIR REDUCTION COMPANY, 60 East 42nd Street, New York 17, N. Y., developed the Airco Model MCM 200 for general maintenance and production welding. This model is a transformer type with a 50 percent duty cycle, NEMA rating. It is available as 220-volt or 220/440/550-volt unit. Two open-circuit voltages are provided, 80 volts on the low range and 55 volts on the high. There are no moving parts in the welder.

BUTLER BIN COMPANY, Waukesha, Wis., produced a bin-level indicator of heavy, malleable cast iron body with a pressure-sensitive metal diaphragm that can be used in any type of bin and with virtually all materials. It combines accuracy with long life.

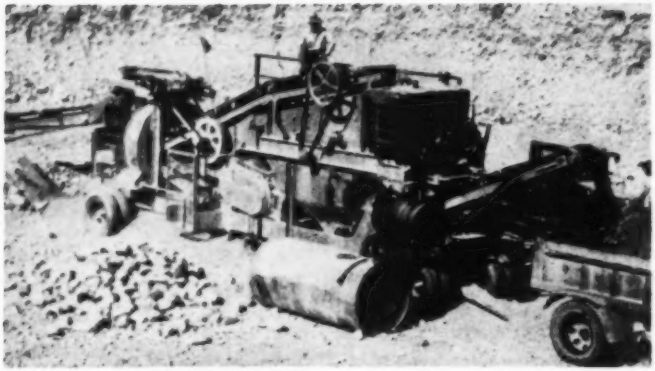


DINGS MAGNETIC SEPARATOR COMPANY, 4740 W. Electric Avenue, Milwaukee 46, Wis., introduced the "Perma-Plate" magnets for removing tramp iron. These separators may be mounted above belt conveyors, in chutes, spouts, and ducts, or in feed tables. They work with wet or dry material and are not affected by weather. Automatic self-cleaning models are available. They are made in 19 sizes.

GENERAL SCIENTIFIC EQUIPMENT COMPANY, 2700 W. Huntington Street, Philadelphia 32, Pa., is marketing a glass and plastic salt tablet dispenser. The dispenser is easily installed near drinking fountains and serves as visible reminder to persons working near kilns, driers, and other hot equipment and during summer weather, that their salt requirements must be met to prevent heat prostration, dizziness, and other symptoms due to salt loss.



LIPPMAN ENGINEERING WORKS, Milwaukee, Wis., has added a manganese apron feeder to its line of heavy- and super-duty apron feeders. The feeder is 4 ft. wide and any length desired. Pans, rollers, sprockets, and bushings are cast austenitic manganese steel. Pans hinge together and are self-cleaning.



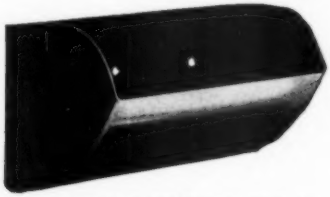
UNIVERSAL ENGINEERING CORPORATION, Cedar Rapids, Ia., brought out an improved "Gravelmaster" portable plant. The model 880 junior B plant is lower in height, with increased screening area of a 2- by 8-ft. 2½-deck screen. A 10- by 16-in. jaw crusher, and 18- by 16-in. star gear roll crusher, and a shovel-loading hopper are additional features. The plant is said to meet all highway limitations and to produce specification material.

CATERPILLAR TRACTOR COMPANY, Peoria, Ill., added a large-capacity U-shaped bulldozer to its attachments for the D8 track type tractor. The design permits long-haul pushing of loose material without excessive end spillage, and is excellent for stockpiling and similar operations. The blade is approximately 12 ft. long and 46 in. high, with a lift at the center of 48 in. Blade pitch may be adjusted up to 10 deg. Construction is box type.

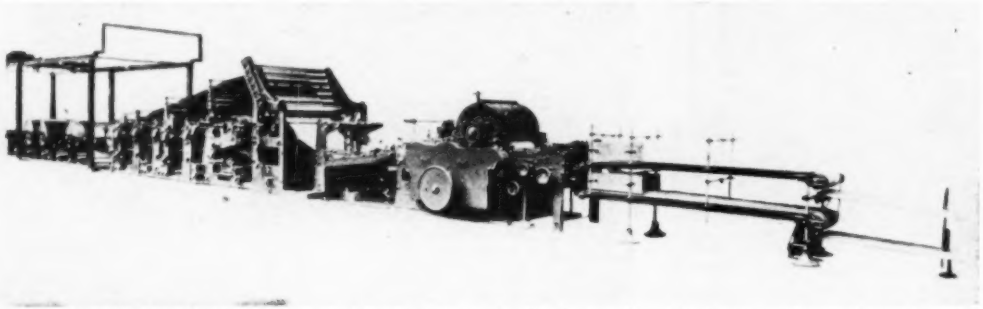
LULL MANUFACTURING COMPANY, 3612 East 44th Street, Minneapolis 6, Minn., designed a "shovel loader" for use with the Case VAI tractor. The loader does not interfere with mowing attachments on this tractor. The shovel mounting can be used for ⅜- to 1-cu. yd. buckets. Automatic bucket leveling, instantaneous dumping, and "controlled scooping" action are some of the features.

PIONEER ENGINEERING WORKS, Minneapolis 13, Minn., brought out a triple roll crusher of 54-in. by 24-in. size. The crusher is designed to operate behind a jaw crusher and may be used in stationary or portable operations. By combining two stages of reduction in one crusher, larger feed can be handled and output stepped up. Nominal production is about 35 tons per hour of minus ½-in. to 500 tons per hour of minus 4-in.

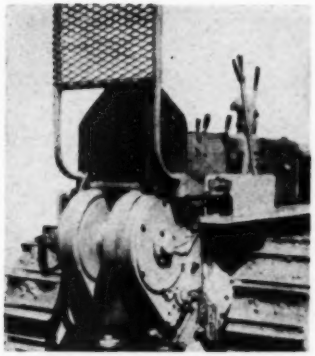
ROGERS IRON WORKS, Joplin, Mo., have announced a drill jumbo that is adaptable for drilling, powder loading, scaling, roof bolting, and timbering. The jumbo features hydraulic jib arms with self-leveling operators platforms, a mast platform that is adjustable at any height and a folding mast for passage through low entries. The tracks are independently driven by electric motors.



B. I. WELLER COMPANY, Dept. A, 327 S. LaSalle Street, Chicago 4, Ill., has an elevator bucket that is built of heavy-gauge welded steel so the interior is entirely smooth. The "Calumet" bucket is claimed to have a shape that conforms to the natural flow of material at the unloading point and a lip that is fashioned to pick up capacity loads which are held by the top portion of the ends. The bucket can operate at all speeds and over all sizes of pulleys.

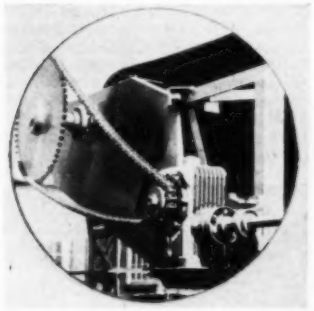


H. H. HEINRICH COMPANY, New York, N. Y., started distributing the Windmoeller & Hoelscher bag-making machine. This machine produces multi-wall bags of two to six plies in several sizes. Included is a printer which can handle up to four colors, a tuber, and a bottom pasting unit which is said to give better moisture resistance to the seal. A built-in crane handles paper rolls and makes operation of the machine more efficient.



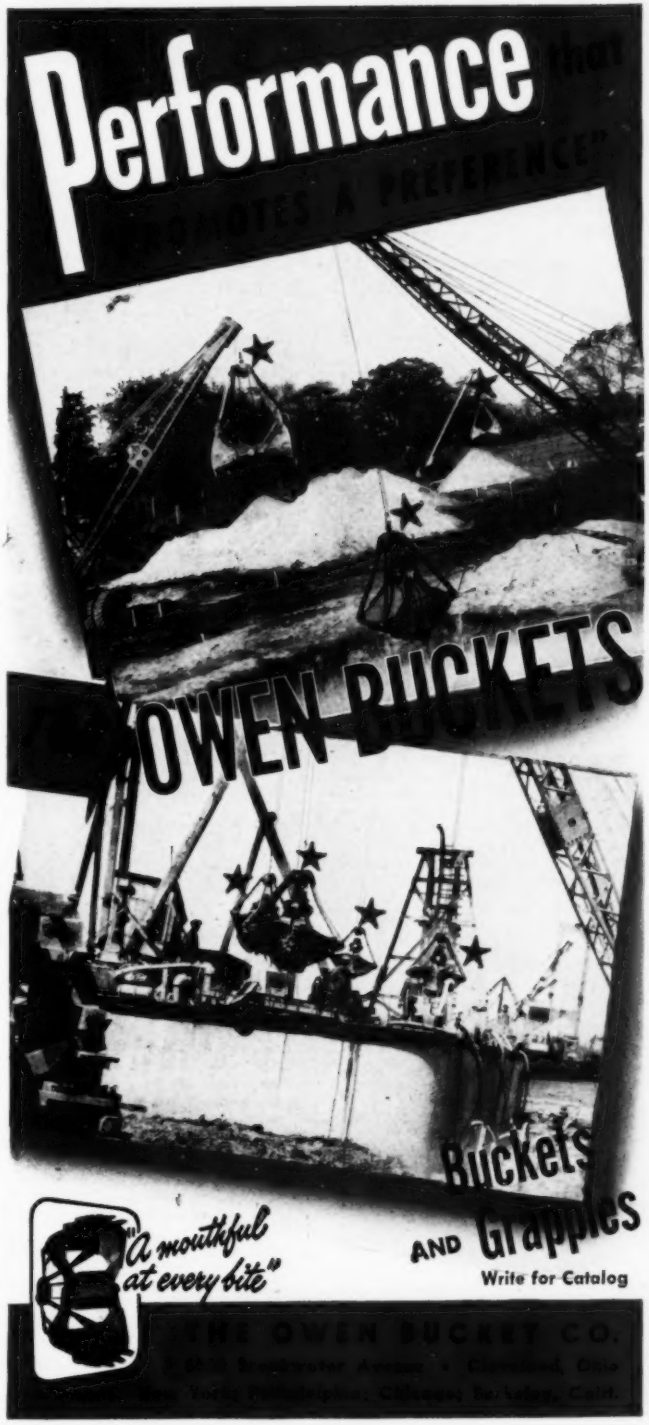
HYSTER COMPANY, 2902 N. E., Clackamas Street, Portland 8, Ore., placed a high-speed winch on the market. This winch is designed for use with Caterpillar D4 tractors. It is lightweight and free-spooling with a line pull of 3,100 lb. to 7,000 lb., depending on the amount of line on the drum. Drum capacity is 214 ft. of ⅜-in. cable.

STULZ-SICKLES COMPANY, 134 La-Fayette Street, Newark 5, N.J., is marketing a hard surfacing welding rod under the name "Seaco". Seaco rods are recommended for use on new manganese parts to protect them until work hardening takes place, on rebuilt manganese parts, and on mild steel as a protection against abrasion. The rods are designed for reverse polarity a.c. or d.c. Buckets, 'dozer blades, chutes, crusher parts, dredge pumps, hammermills, grousers, and similar parts are suggested applications.

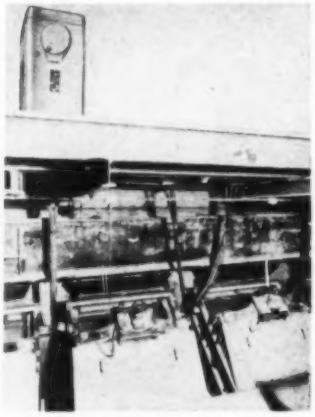


MICHIGAN TOOL COMPANY, Cone-Drive Gears Division, Detroit, Mich., has introduced a cone-drive gear reducer of small size, light weight, and low cost for applications where the reduction of weight in overhung loads is desirable. Complete enclosure provides dust protection to the gears.

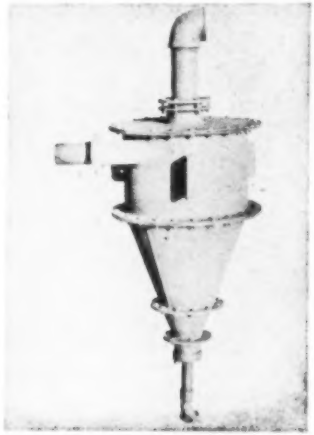
HEWITT RUBBER DIVISION, HEWITT-ROBBINS, Buffalo 5, N. Y., designed an all-purpose hose, the "Servall". It may be used for water, air, intermittent gasoline or oil, mild chemical, and low-pressure spray services. The body is synthetic rubber, with a carcass of braided, high-tenacity rayon. Several sizes are available in single or double braid styles.



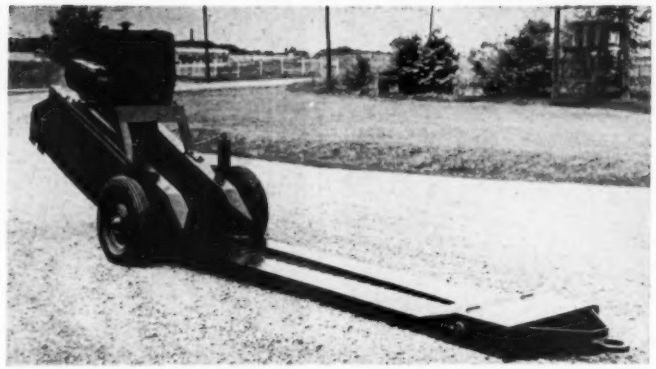
SAUERMAN BROS., INC., 534 S. Clinton Street, Chicago 7, Ill., introduced a new series of small slackline cableways with 1/3- to ¾-cu. yd. capacities. These cableways are furnished with a tubular steel mast. The mast is shipped in two parts which are bolted together for easy erection. A ladder welded to the mast and a railed platform at the top makes servicing of the sheaves easy. A swivel plate is provided for fastening the guy cables at the top of the mast, and a ball-and-socket casting is provided at the base.



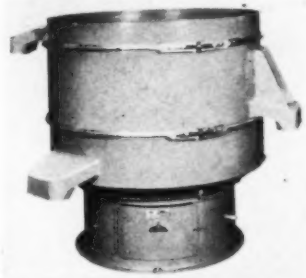
W. S. TYLER COMPANY, Cleveland 14, O., brought out the "Ty-Electric" heaters for screens. The unit, which fits Humm-mer, Tyler-Niagara, and Ty-Rock screens, produces a current that develops a mild heat in the screen wire, so that wet or sticky materials are dried and do not adhere to the wires to cause blinding. Screening is speeded up and the life of the screen cloth is lengthened as there is no delay or damage caused by heating to open blinded screens.



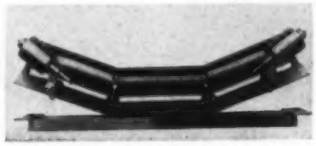
GEORGIA IRON WORKS, 605 12th Street, Augusta, Ga., announced the "Whirlcone"—a wet cyclone for fine sand and similar separation. A spiral chamber gives the incoming pulp a rotary motion before it enters the conical section where separation takes place. A suction overflow removes the water and waste products. The control of the separation process is by adjusting the overflow pipe in relation to the bottom of the cone.



ATLAS CONVEYOR COMPANY, Clintonville, Wis., produced a heavy-duty car unloader. The unloader has a 24-in. belt with a speed of 130 f.p.m. Cleats are on 5-in. centers with take-up and adjustment screws at head and tail pulleys. Power may be either gasoline or electric motors operating through a speed reducer. Individual leveling of wheels is a feature.

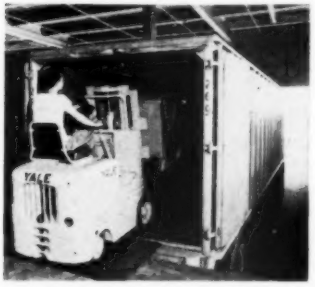


SOUTHWEST ENGINEERING COMPANY, Los Angeles, Calif., introduced a vibrating screen for wet or dry separation. The "Sweco Separator" is circular and uses a compound gyratory motion which tumbles the material in all planes at once. Material is fed at the center and discharges at the periphery. The unit is self-contained and may be obtained in single- or multiple-deck models.

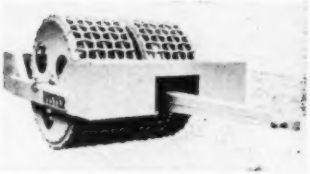


STEPHENS-ADAMSON MANUFACTURING COMPANY, Aurora, Ill., announced a belt training carrier that is said to cause only negligible wear on the belt. The training carrier uses training rollers at the outside of the carrier that respond to any shift in the belt and causes the carrier to tilt in an angular position with respect to the belt travel. This returns the belt to center and the carrier returns to normal. The training carriers need to be only 50 to 100 ft. apart.

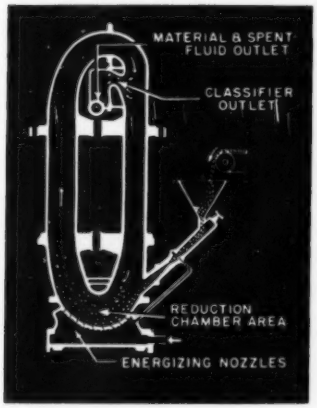
DETROIT DIESEL DIVISION, GENERAL MOTORS CORPORATION, Detroit 28, Mich., announced a new method of sealing the cylinder block and head on the General Moters Series 71 diesel engines. The new method eliminates the copper head-gasket and replaces it with individual cylinder gaskets of Terne plate which preserve the cylinder compression. Oil and water passages are sealed with individual synthetic rubber gaskets which fit into grooves machined in the block. All the individual gaskets are compressed when the head is bolted on. In addition to the new method of head sealing, this series has a 30-degree angle exhaust valve, so that less turbulence occurs in the exhaust gases and scavenging air.



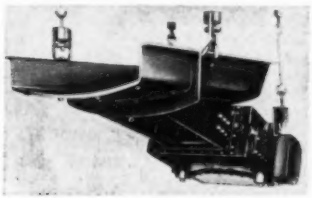
YALE AND TOWNE MANUFACTURING, PHILADELPHIA DIVISION, 11000 Roosevelt Blvd., Philadelphia 15, Pa., designed a fork truck for operation in confined spaces. The "Truckers" series can handle loads to 2,000 lb. and can clear 6-ft. headroom with the mast lowered. The lift is telescopic and rises to 54 inches before the secondary channels rise to give a 108 inch maximum.



HYSTER COMPANY, Portland 8, Ore., announced a salvage roller for bituminous surfaces. The roller is similar to conventional type rollers except for the tire, which is formed of interwoven steel bars to make a grid. The weighted bars break up the packed bituminous surface with no kick up and with the material held in place by the crossed bars.

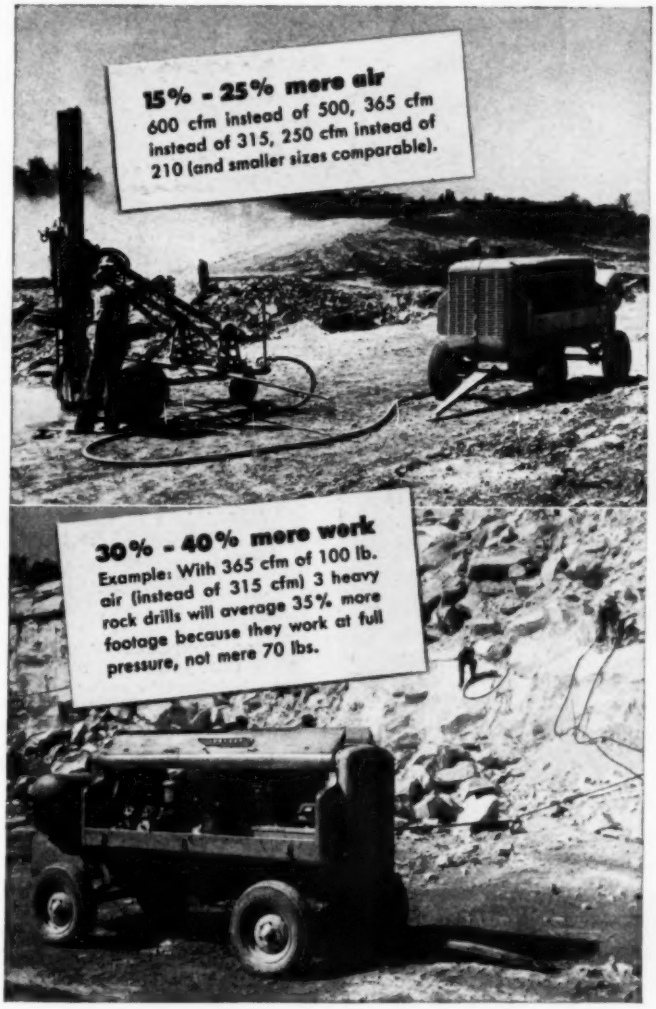


C. H. WHEELER MANUFACTURING COMPANY, 19th Street and Sedgely Avenue, Philadelphia 32, Pa., offered the "Fluid Energy Mill" for sale. This mill has no moving parts but uses the principles of fluid energy attrition. Material is fed through a nozzle into a stream of high-velocity air or gas. The supersonic speed of the circulating medium causes the particles to break up by impact and abrasion against each other. Centrifugal force separates the particles by size and the smaller ones are removed from the inside of the mill. Drying and other functions can be performed simultaneously by use of a proper medium.



SYNTRON COMPANY, 384 Carson avenue, Homer City, Pa., announced a heavy-duty line of vibratory feeders with dust-tight enclosures. The enclosed "Vibra-Flow" feeders are prevented from clogging due to hopper spillage or dust accumulations. Covers are gasket sealed.

"new standard" Jaeger Compressors


15% - 25% more air
600 cfm instead of 500, 365 cfm instead of 315, 250 cfm instead of 210 (and smaller sizes comparable).
30% - 40% more work
Example: With 365 cfm of 100 lb. air (instead of 315 cfm) 3 heavy rock drills will average 35% more footage because they work at full pressure, not mere 70 lbs.

Why starve your modern air tools with "old standard" compressors that have not increased their air output in 19 years? Jaeger Air-Plus standards provide the increased air you need to power today's tools at their full efficiency—*at the lowest cost per foot of air of any compressors on the market.*

See your Jaeger distributor or send for complete Catalog

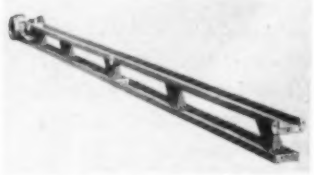
THE JAEGER MACHINE COMPANY

602 Dublin Ave., Columbus 16, Ohio

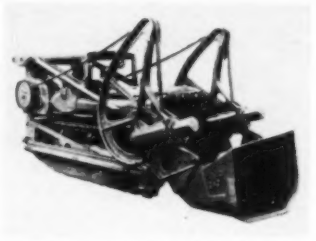
PUMPS • MIXERS • HOISTS • TRUCK MIXERS • PAVING MACHINERY

FRANK G. HOUGH COMPANY, 750 Seventh Avenue, Libertyville, Ill., brought out a crawler-mounted tractor-shovel the "Payloader T-12." This model has four forward and four reverse speeds, a bucket capacity of one cubic yard, and a rear-mounted engine. Boom arms and bucket dump are hydraulically operated. The crawlers permit the machine to be used in soft ground conditions.

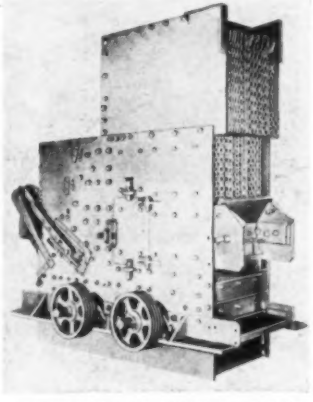
BEAUMONT BIRCH COMPANY, 1505 Race Street, Philadelphia 2, Pa., is marketing the Beaucalloy "Unicast" elevator bucket. The bucket is cast integrally with a link of chain so that the bucket interior has no projections. It is as easy to replace as a link of chain and cannot work loose. Five sizes are stocked, and other sizes can be made to order.



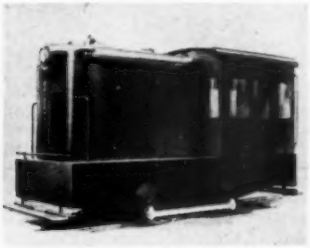
LINK-BELT COMPANY, 307 N. Michigan Avenue, Chicago 1, Ill., developed the "Flexmount" oscillating trough conveyor. The trough is of one piece of metal and oscillates on flexible mountings. Dust-eliminating covers can be provided. It is designed for moderate amounts of loose materials.



EIMCO CORPORATION, Salt Lake City 8, Utah, perfected the model "102" which is designed for surface or underground use. The model 102 is a "Rockershovel" with a capacity of ¾ cu. yd. It is crawler-mounted and may be powered with electricity or diesel. The loading cycle is approximately 15 seconds.



PETTIBONE MULLIKEN CORPORATION, 4700 W. Division Street, Chicago 51, Ill., brought out the "Impact Master"—a heavy-duty impact breaker. This machine employs two rotors with rigid hammers operating at 550 to 1000 r.p.m. which intercept the rock and break it by impact. A stripper bar and lower screen grate limit the size of the discharge. Size of the aggregate is controlled by the speed of the rotors and the stripper bar adjustment.



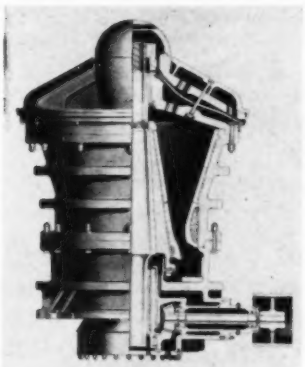
DAVENPORT LOCOMOTIVE DIVISION, Davenport Besler Corp., 2305 Rockingham Road, Davenport, Ia., brought out a series of diesel-powered torque-converter drive locomotives. There are various sizes and gauges obtainable to meet the needs of individual conditions. Smooth transition from speed to speed is a feature.

KOEHRING COMPANY, Milwaukee 16, Wis., produced a hoe attachment for its line of excavators. The new design will permit vertical digging to a depth of 19 ¾ ft. Double digging lines eliminate moving cable at the dipper front and reverse bends that might clog. Angle of the dipper is controlled by adjusting links.

BABCOCK AND WILCOX COMPANY, 85 Liberty Street, New York 6, N.Y., announced a super refractory for lining high-temperature furnaces. The new material "B&W Allmul" is produced from mullite. Allmul does not melt until heated to more than 3,300 deg. F. and will support a load of 1,000 lb. at 3,000 deg. F. without deforming.

B. F. GOODRICH COMPANY, Akron, O., perfected a method for splicing steel cable conveyor belting in the field or in the shop. Small tubular connectors are placed over the ends of the cables and crimped so that the cable and connector are locked together. The fabric body and rubber cover are rebuilt around the connectors and vulcanized. A scraper and a crimper are the only special tools.

THE BROWNING CRANE AND SHOVEL COMPANY, 16226 Waterloo Road, N.E., Cleveland 10, O., added the "Torqflo" locomotive crane to its line. This model uses a hydraulic power transmission to operate travel, boom, swing, and hoist mechanisms. Capacities of the new line range from 25 to 50 tons. The elimination of shocks to cables and clutches by the hydraulic coupling makes it suitable for car switching, magnet hook, block, and bucket operations.



ALLIS-CHALMERS MANUFACTURING COMPANY, 974 S. 70 Street, Milwaukee, Wis., announced an improved line of "Superior" gyratory crushers. This crusher has top and bottom shells of cast-steel, reinforced with annular ribs. A cast-steel spider permits raising the forged steel main shaft as wear progresses on the manganese steel mantle and concaves. A straight down discharge permits shortening of the bottom shell and saves weight, while elimination of the diaphragm prevents packing of sticky material. Bearings and the lubrication system have been improved. Standard and heavy-duty primaries and large-capacity secondaries are included.

FARRELL-CHEEK STEEL COMPANY, Sandusky, O., is marketing a line of cast chain and attachments such as bucket links, sprockets, buckets, traction wheels, conveyor rollers, and special shapes. These items are made of Farrell's "85", a special-analysis alloy steel processed to give toughness, strength, rigidity, and ductility. Items made of this steel are able to withstand shock, heavy loads, sudden strains, and wear without distortion.

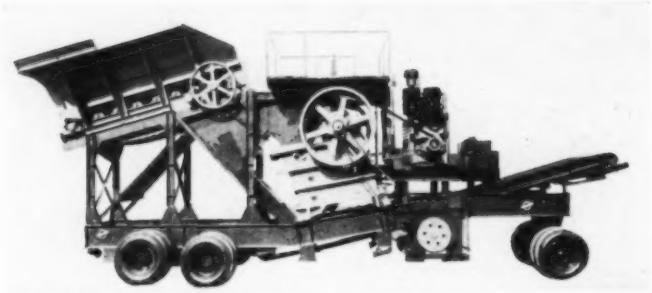
ROCK BIT SALES AND SERVICE COMPANY, 2514 E. Cumberland Street, Philadelphia 25, Pa., produced a "Hole-Saver" for reclaiming lost bits from drill holes. The device is attached to a threaded drill steel and operated so that the left hand tapered threads at the end bite into the metal of the lost or broken piece so it can be easily removed.

MARION POWER SHOVEL COMPANY, Marion O., designed a crane for drop ball use. The "Model 362" has a flexible type boom to withstand shock loads generated when a drop ball misses or glances off a rock. Other features are longtype crawlers for stability; heavy-duty clutches, shafts, bearings and brakes; and a special boom hoisting arrangement for constant operation of the boom.

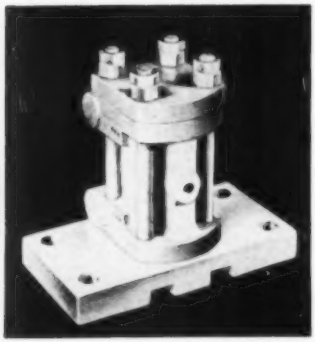
PIONEER ENGINEERING WORKS, Minneapolis 13, Minn., added a 72-in. primary feeder to its line of "Pioneer-Oro" heavy-duty feeders. The "Jumbo" is made in lengths to 60 ft. Pans and wearing parts are of cast-manganese steel. Pans are interlocking and overlapping and have drive links cast integrally with them. A take-up is provided.

EASTON CAR AND CONSTRUCTION COMPANY, Easton, Pa., added 12 percent in water level capacity of its new side-dump trailers without increasing the overall dimensions. The new trailers have all-welded bodies with strengthened edges, box section reinforcements, and replaceable side liners. The bodies are reversible and may be dumped to either side. They are constructed with capacities of 14, 17, and 20 tons.

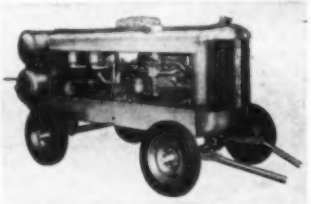
HIGHWAY EQUIPMENT COMPANY, 616 D Avenue Northwest, Cedar Rapids, Ia., is manufacturing a self-unloading bulk transport trailer. The trailer is built in standard units of 30 ft. consisting of four compartments. Each compartment has a separate bottom-dump door controlled from the outside so that different materials may be carried simultaneously. A conveyor chain in the bottom carries the material to a rubber belt elevator for discharge. A 13-hp. Wisconsin air-cooled engine powers the conveyor and elevator through clutches. The trailer is adapted to handling any bulk material and may be converted.



SMITH ENGINEERING WORKS, Milwaukee, Wis., brought out a line of portable primary jaw crushers. These crushers have a special-duty apron feeder, a heavy-duty roller-bearing jaw crusher, and a delivery conveyor. A grizzly is optional. There are three sizes in the line.

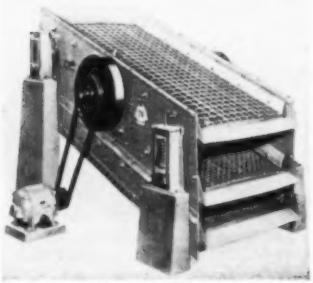


CANNON VIBRATOR COMPANY, 1110 Power Avenue, Cleveland 14, O., introduced a "Quiet Type" pneumatic vibrator for bins, hoppers, shakeouts and similar duty. Heavy pistons with long strokes and no impact at the end of the stroke eliminate noise and end breakage.



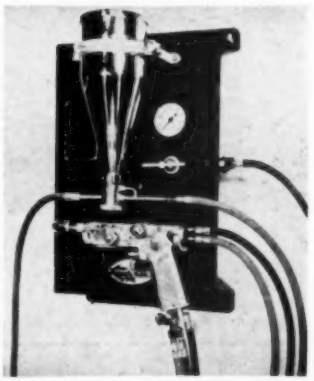
SCHRAMM, INC., West Chester, Pa., added a 210-cu. ft. single-stage compressor to its line. The "Unistage" compressor has a 6-cylinder engine and a 6-cylinder compressor with about 90 percent of the engine and compressor parts interchangeable. Single-staging of the compressor eliminates the problems of two-staging and the use of an intercooler. The intake valves are cam-operated.

THEW SHOVEL COMPANY, Lorain, O., produced the MC 504 and MC 504W "Moto-Cranes". These are rated at 25 tons' lifting capacity, with 10 ft. outriggers. They can work with 130 ft. of boom. The turntable is powered with a 6-cylinder gasoline engine delivering power through a Twin Disc hydraulic coupled power take-off. Features include precision boom lowering; hook block, swing brake, cable and mechanical boom stops; and floating boom harness for an eight-part hoisting line. A third drum may be added, and the machine can be converted to shovel use by adding a shovel boom and dipper.



DENVER EQUIPMENT COMPANY, 1400 17th Street, Denver 17, Colo., announced the Denver-Dillon vibrating screens with full "floating circle" action. The motion is produced by a statically and dynamically balanced eccentric shaft rotating in heavy-duty anti-friction bearings. The decks are suspended on rod or cable supports, rubber mounted, to create a pendulum effect without vibrating the supports. The standard one- and two-deck models can have additional decks bolted on; or a dust cover.

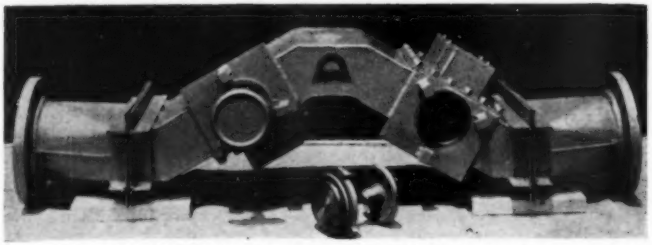
NOPCO CHEMICAL COMPANY, Harrison, N.J., marketed an approved additive for air entrainment in cement products. The material, "Ertrane C", is soluble in water and can be used within 30 minutes after preparation. It is said to increase plasticity, water repellency, and storage life. Cement treated with the compound will not cake during long storage periods. It may also be added to concrete during the mixing period.



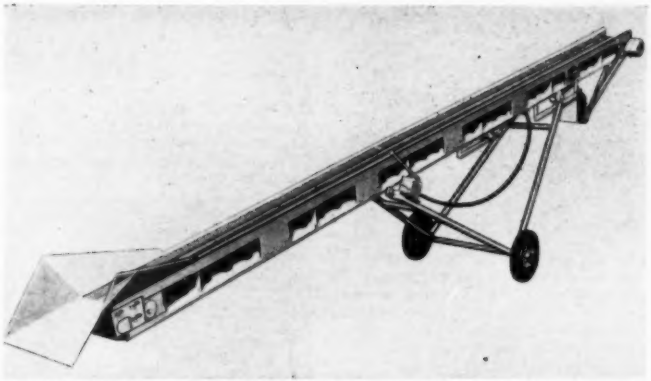
WALL COLMONOY CORPORATION, 19345 John R Street, Detroit 3, Mich., perfected the "Spraywelder" for applying hard-facing alloys by use of metallizing procedures. The improved unit features lighter weight, large-capacity air filter, finger-tip control trigger, improved valves, locked feed mechanism, and eye-level mounting of gauge and regulator.

GOODYEAR TIRE AND RUBBER COMPANY, Akron, O., developed a line of V-belts with a chemically-produced fiber noted for its high-strength, low-stretch, mildew- and water-resistant, and shock-absorbing qualities. Belts made of this material are sold under the trade name "HY-T" and are said to handle 40 percent more horsepower.

AMERICAN OPTICAL COMPANY, Southbridge, Mass., brought out a welder's goggle that has removable and adjustable binder type leather side shields. Leather is also used to cover the bridge and reinforcing bar. These goggles can be adjusted by loosening the end piece screws and are known as series 3018A.

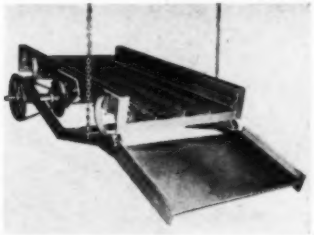


ERIEZ MANUFACTURING COMPANY, Erie, Pa., has added a magnetic separator for liquids to prevent damage to pumps, grinders, and other machinery. The "Pressure Hump" directs the liquid by baffles to two magnetic plates on opposite sides of the pipe. Sizes range from 6 to 20 inches in diameter, with volumes from 50 c.f.m. to 250 c.f.m. and pressure to 45 p.s.i.

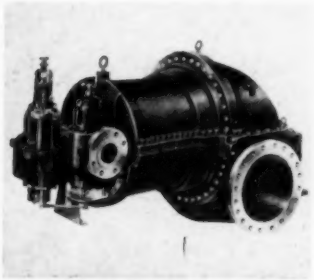


BAUGHMAN MANUFACTURING COMPANY, Jerseyville, Ill., introduced the "Model 272" portable conveyor. This is of the troughing type, with the belt sliding on the trough and sealing at the edges when loaded. Head and tail pulleys are of the self-cleaning wing type which gives positive traction and avoids belt damage from lodged material. A hydraulic hoist adjusts the height of the conveyor, while needle bearing wheels with pneumatic tires make moving easy.

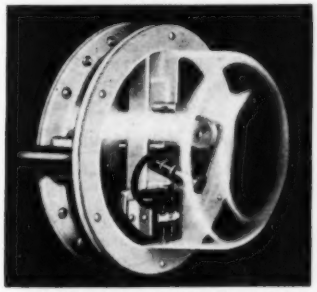
DEISTER MACHINE COMPANY, Fort Wayne 4, Ind., developed a rubber molding for vibrating screen supports. The molding fits partly around the screen cross support and is held from turning by a wedge-shaped piece that is welded to the top of the support. The flat top of the molding eliminates line contact of the screen and support and lengthens life of the screen cloth by reducing abrasion and friction and spreading the point of contact.



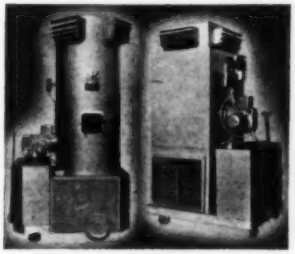
KOLMAN MANUFACTURING COMPANY, West Twelfth Street, Sioux Falls, S. D., announced a vibrating screen for use on belt conveyors or bucket loaders. The screens mount on the conveyor or loader and are driven from it by V-belts or chains. The screens can be used to separate oversize or to size material.



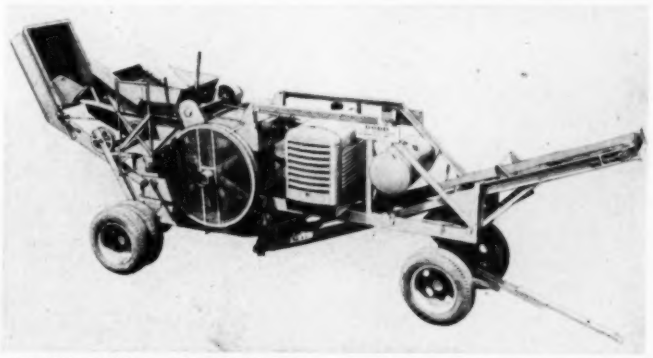
GENERAL ELECTRIC COMPANY, STEAM TURBINE DEPARTMENT, Schenectady 5, N. Y., announced a line of multi-stage steam turbines. They are available in two to ten stages and from 200- to 5,000-hp. There are four models which provide a range of speed reduction and regulation. One model can be used with process steam.



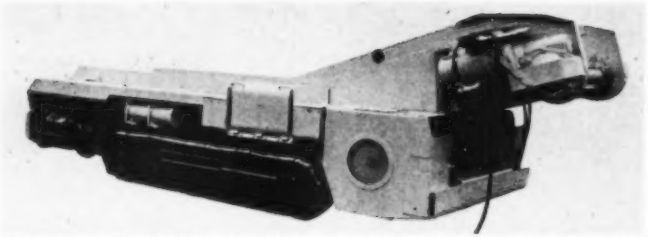
BIN-DICATOR COMPANY, 13946-L Kercheval, Detroit 15, Mich., line of bin level indicators are activated by the pressure of the material in the bin on the diaphragm of the indicator. The pressure actuates a switch which may connect with a signal or a switch for controlling the flow of material.



PRAT-DANIEL CORPORATION, East Port Chester, Conn., announced portable "Thermoblocs". These are complete heating units, including fuel tank mounted on easy-to-operate trucks. These were developed for use wherever heat is needed temporarily. Sizes range from 300,000 to 1,000,000 B.t.u.'s.

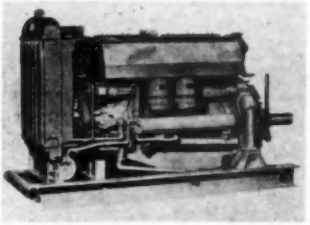


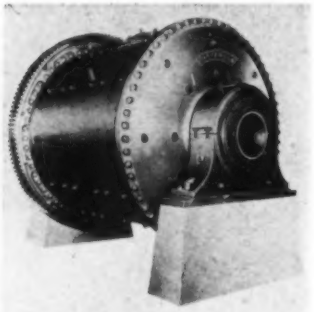
UNION BOILER AND MANUFACTURING COMPANY, Lebanon, Pa., introduced a portable crushing plant with a capacity of 30 tons per hour of minus 12-in. stone. The machine has a triple jaw crusher and a double-deck sizing screen. A scoop is loaded at ground level and elevates the material to a grizzly, where the oversize is scalped to the crusher. Sized material from the screen may be combined or discharged separately.



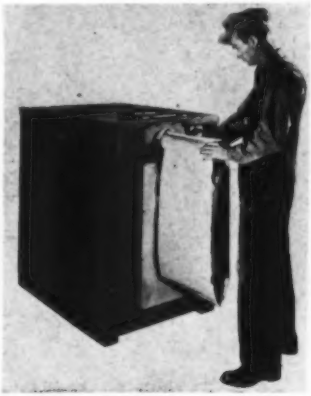
GENERAL ELECTRIC COMPANY, LOCOMOTIVE AND CAR EQUIPMENT DEPARTMENT, Schenectady 5, N. Y., announced a cable-reel, crawler-mounted shuttle car for mine use. The crawlers make possible the use of the car in places where light ground loading is needed, and permit using a wider conveyor, as no space is needed for wheel turning clearance. Direct-current motors drive the crawlers and conveyor, while a motor-driven pump actuates the other equipment. The level-winding reel holds 600 ft. of cable.

JOY MANUFACTURING COMPANY, Pittsburgh 22, Pa., developed a low-voltage portable lighting system for mining and construction work. The "Joy-Lite" is driven by compressed air and produces an output of 250 to 280 watts. Air consumption is less than 25 c.f.m. The entire generating unit is enclosed for protection against moisture and for easy portability.

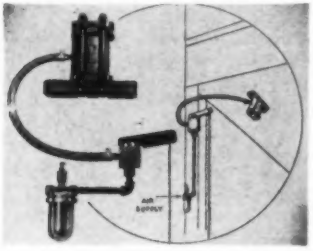




PATTERSON FOUNDRY AND MACHINE COMPANY, East Liverpool, O., introduced a heavy-duty continuous ball mill. The mill has hollow trunnions for feed and discharge, and can be operated wet or dry, in open or closed circuit. Features of the mill are cast-steel heads, welded-steel shells, split and reversible ring gear, and positive bearing lubrication. Sizes of the mills range from 2 by 2 ft. to 10 by 24 ft.



E. D. CODDINGTON MANUFACTURING COMPANY, 5074 N. 37 Street, Milwaukee 9, Wis., is introducing a push-button valve bag packer. The "Auger-Matic" is a self-contained unit that is placed under bins or chutes. It automatically fills and weighs the bags and shuts off. Augers can be changed for different materials and the entire machine can be readily moved to new locations. Capacity is up to 100-lb. bags.



CLEVELAND VIBRATOR COMPANY, Cleveland 13, O., originated a packaged kit consisting of a pneumatic vibrator, a control valve, an air line lubricator, and nipples and connector for attaching to hoppers, bins, and other storage containers. Any of six standard vibrators ranging from 1¼-in. to 4-in. pistons may be obtained. Speed of the vibrators is controlled by regulating the air control valve.

MURPHY DIESEL COMPANY, 5307 W. Burnham Street, Milwaukee 14, Wis., announced a line of heavy-duty diesel engines. There are six models ranging from 145- to 220-hp. and designed for continuous speeds up to 1,400 r.p.m. They are true diesel type, with four valves per cylinder unit fuel injection, and hydraulic servotype governor.

ELECTRIC MACHINERY MANUFACTURING COMPANY, Minneapolis 13, Minn., announced a line of heavy-duty induction motors. These are wound-rotor type which provides variable speed. They are especially useful for applications requiring high starting torque and low starting current or long acceleration periods. These motors are built in sizes from 30 to 1,500 hp. Forced-ventilation, splash-proof, or totally enclosed frames are available.

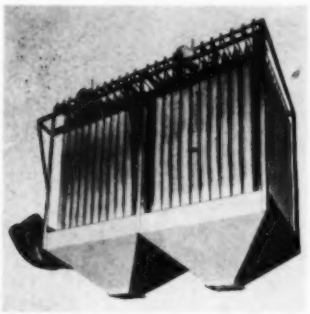
TOOL STEEL GEAR AND PINION COMPANY, Cincinnati 16, O., is marketing gears, pinions, sheave wheels, sprockets, and shafts that are surface-hardened to resist wear. Cores are treated for refinement, ductility, and toughness. Standard items are stocked and special ones built to order.

COOK BROS. EQUIPMENT COMPANY, 1815 N. Broadway, Los Angeles 31, Calif., have introduced the "C-12," a heavy-duty truck. It has a 191-in. wheelbase, 198-hp. Continental 6-cylinder engine, full-floating double-reduction axle, Fuller five-speed transmission, C-B three-speed auxiliary transmission, Westinghouse air brakes, Ross cam and lever steering column, Delco-Remy electrical system, and Shuler front axle. The 9-cu. yd. body is of high-tensile steel.

● Dust Collecting Bag House

A bag house has been designed by John E. O'Shea, 4441 Santa Fe Avenue, Los Angeles 58, Calif., to meet the stringent dust control laws of Los Angeles County, which limit dust or other solid discharge from industries to 2.8 lb. per hour per 1,000 lb. of material processed, with a maximum for any plant of 40 lb. per hour.

This bag house dust collector places the exhaust fan ahead of the bag house and allows the cleaned gases to enter the atmosphere from openings around the upper edge of the house. The bags, for most installations, are 6 in. in



diameter and 8 ft. long. They are closed at the upper end and slip over a carrier rod, while the lower end is clamped to a cylindrical sleeve in the top of the hopper. The cloth used in making the bags varies with the temperatures encountered. They are all claimed to be over 99 percent efficient.

Shaking of the bags is done by an electric motor which is connected by gear reducer and bell crank to the carrier rods, producing a forward and backward motion of the bags. The motor can be operated automatically or by hand.

The bag house is shipped completely assembled for small units and knocked down for larger ones. Side panels are easily slipped out for inspection.

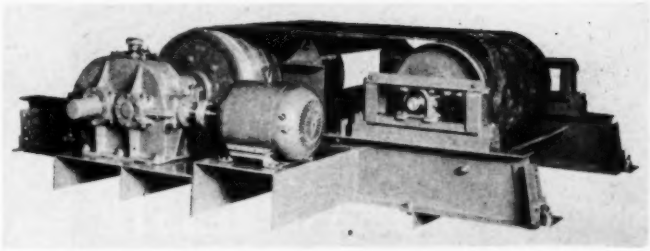
● Magnetic Pulleys

A complete line of permanent magnetic pulleys for light, standard, or heavy-duty service is available from the Homer Manufacturing Company, 142 E. Pearl Street, Lima, O.

Homer "Power-Plus" magnetic pulleys are made for 12-, 15-, 18-, and 20-in. diameters, with widths from 4 to 60 in. Other sizes can be made to order.

The permanent magnets are of Alnico metal, which is said to be the best material invented for this use. It is claimed that permanent magnets made of this material exceed in power and efficiency electro-magnets of the same size.

The unit illustrated consists of a 24-in. diameter by a 42-in. long idler pulley on the receiving end of the unit, and a 42-in. flat 6-ply conveyor belt and a 30-in. diameter by 42-in. long Homer "Power-Plus" permanent magnetic pulley on the discharge end. This unit was chosen by reason of efficiency tests to be incorporated into a magnetic ore cobbing system, with belt conveyor operating at a speed



of approximately 300 f.p.m. The service to which this unit is subjected is as follows:

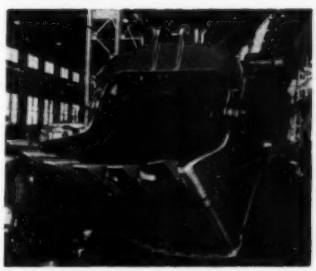
Magnetic ore, containing ore, rock, and fines, is delivered to a heavy-duty jaw crusher which reduces the ore and rock to plus 1-in. minus 4½-in. size. Crushed rock and ore is discharged from the crusher on to a conveyor belt at the rate of 175 t.p.h., with an analysis of 93 percent ore and 7 percent rock. This is elevated by the conveyor over a 30-in. electro-magnetic pulley which recovers 65 tons of ore per hour.

The balance of the burden, 110 tons per hour, including all of the rock from the first separation, now analyzing 89 percent ore and 11 percent rock, is discharged on to the Homer unit, which is used in tandem with the electro-pulley in the first recovery operation. The second and final recovery of ore is made by the Homer permanent magnetic pulley unit; this amounts to 98 tons of lean ore per hour. The cast-off of rock amounts to 12 t.p.h.

Marion 10-Cu. Yd. Shovel Announced for Tough Jobs

A 10-cu.-yd. mining and quarry type shovel mounted on two crawlers has been announced by the Marion Power Shovel Company, Marion, O. This is said to be the largest shovel of this type in the world.

The shovel, the "191-M," has been designed for the hardest service where large yardages must be moved under adverse conditions. It has been developed to meet the need for a machine that will



● The 10-cu. yd. "bite" of the big unit.

produce the quantities needed to fill the new haulage units with the minimum of loading time. The 191-M can load a 50-ton class truck with three or four passes in a matter of as many minutes.

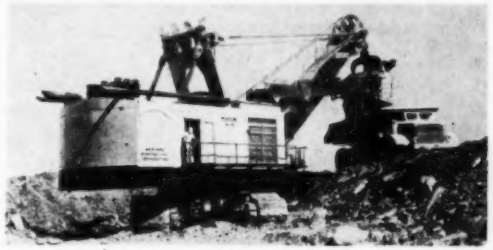
The shovel is a close-coupled machine with a relatively short boom and dipper stick for heavy work. It is powered entirely by electricity through Ward-Leonard controls, while "Amplidyne" and "Rototrol" application of power permits high operating speeds. Separate motors and generators operate the hoist, crowd, and swing motions. Each generator is provided with a separate exciter to make the motors more responsive to the controls. Where electric power is not available, a diesel-electric generator can be used to supply the necessary current.

Two matching 187½-hp. motors operate the hoist machinery, while the twin swing motors are 62½ hp. each. Another 62½-hp. motor mounted on the boom powers the crowd and crowd retract. The propel mechanism is operated by clutches off the hoist motors, so that there are no electrical assemblies in the lower frame. Air rams and hydraulic controls are used to supplement the motors in braking and other operations and are governed by the electric control system in the operators cab.

The lower frame of the 191-M is formed of heavy steel plate welded into a deep bulkhead structure for strength and rigidity. To this the crawler frames are attached by bolts and key-type doweled joints. Crawler shoes are of manganese steel and the crawler belts are driven by dirt-shedding sprockets.

The upper frame is a deep, welded structure with machinery supports welded integral with the frame. The house has 3/16 in. steel plates on the sides, roof, and front and ¾ at the rear, with safety glass in all windows. The gantry is all-welded steel construction.

● The "191-M" at work in a quarry.



How NAYLOR gives you EXTRA STRENGTH in Light-weight Pipe

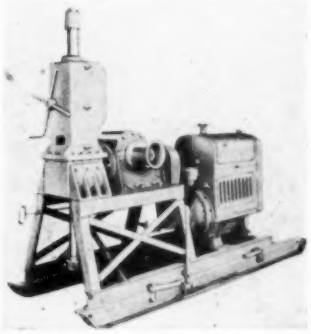
If you want to know why Naylor pipe out-performs other light-weight pipe in mining service, here is just one of the reasons. If you could look inside Naylor's distinctive spiral, you would see the lockseam spiralweld structure which extends in spiral form throughout the length of the pipe. This spiralwelded truss provides greater structural strength—under pressure, compression, collapse, and beam load than any other iron or steel pipe of the same nominal wall thickness. That's why you can use Naylor Pipe on jobs normally requiring heavier-wall pipe. Write for Bulletin No. 507.

Naylor Pipe Company
1257 E. 92nd St., Chicago 19, Ill.
New York Office:
350 Madison Ave., New York 17, N.Y.

● Shot Core Drill

A new shot core drill that can drill holes up to 20 in. in diameter in any formation and has a maximum depth of 600 ft. has been announced by the Acker Drill Company, Scranton 3, Pa.

The new machine, designated as the "Model KR," can obtain cores of any material for exploratory use. It can also drill holes for tube and artesian wells and other purposes. The entire unit is self-contained and is mounted on skids, trailer, or truck. The machine consists of a heavy-duty rotary drill head with a three-speed transmission, a cargo-type

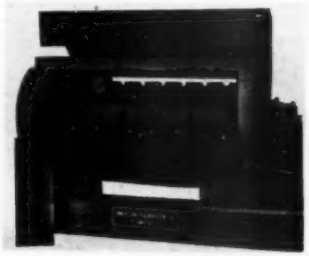


hoist, and a gear-driven positive displacement pump. The drilling shot is carried down the center of the drill rods to the cutting bit, and the cuttings are flushed to the surface. As the bits are run to destruction the operation is said to be exceptionally economical, particularly in the larger sizes. It is claimed that operation is so simple that no special skill or experience is required of the operator.

● Heavy-Duty Hammermill

The American No. 40-S hammermill is a heavy-duty machine of all-steel construction, rib-reinforced at points of strain. It is an up-running type, with hammers, grate bars, and impact plates of cast manganese steel. The rotor shaft is heat-treated alloy steel and revolves in anti-friction bearings enclosed in dust-tight pillow blocks. The liners and other wearing parts are replaceable.

This machine can reduce 30 tons of limestone an hour to minus 10-mesh when fed with 1½-in. material. American hammermills are manufactured by the American Pulverizer Company, 1249 Macklind Avenue, St. Louis 10, Mo.



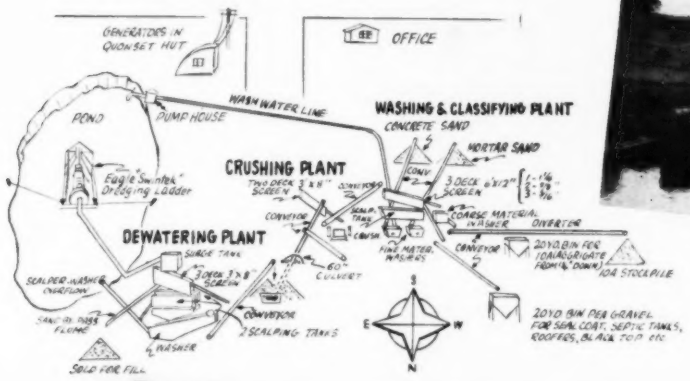
8 Eagle Units UTILIZED at this Michigan "Push Button" Washing Plant

EAGLES are perched all over the modern, efficient washing plant of the Cheney Gravel Co., Holt, Mich. Their dredge is equipped with a light duty Eagle "Swintek" Dredging Ladder which increases ratio of solids intake and eliminates clogged lines. Material is pumped to a Field Dewatering Plant, shown at top consisting of two Eagle Water Scalping Tanks and an Eagle Fine Material Washer. Dewatered material goes to an Austin-Western crushing plant and from there to an Eagle Washing and Classifying Plant equipped with a Water Scalping Tank, two fine Material Washers, one producing concrete sand and the other mortar sand, and an Eagle Coarse Material Washer for washing 10-A Aggregate (minus 1¼" to ⅝"). Much of the output goes to a subsidiary producing concrete products and to an associate road building firm. Entire plant is operated by push button control. Any motor can be stopped or started from control building.

The more Eagle equipment on the job the more you profit—send for the facts!

Cheney's Dewatering station or plant.

Cheney's dredge equipped with light duty "Swintek" Dredging Ladder.



EAGLE IRON WORKS
133 Holcomb Ave. Des Moines, Iowa

personal mention

ROBERT H. WHITE, a director of the Giant Portland Cement Company, Philadelphia, Pa., and the Carolina Giant Cement Company, Harleyville, S. C., has been elected a director of the Corn Products Refining Company.

National Gypsum Company officials have announced the appointment of TOM C. MILLER to the position of executive sales engineer, Industrial Division.

Mr. Miller, who has had 20 years of experience in the lime and portland cement industries, will concern himself with National Gypsum's lime activities. He has had extensive experience in the design, construction, and operation of shaft lime kilns and in the production of chemical lime for specific purposes, as well as in the manufacture of high-calcium and dolomitic finishing and masonry mortar limes. He also has had experience in the development of lightweight concrete aggregates from clay and shales. He is a member of the American Chemical Society and the American Concrete Institute.

KARL V. LINDELL has been appointed vice-president of Canadian Johns-Manville Company, Ltd., and general manager of the company's Asbestos Fibre Division, according to an announcement released by A. R. Fisher, president of Canadian Johns-Manville.

In his new position as general manager of the Asbestos Fibre Division, Mr. Lindell succeeds Mr. Fisher, who in addition to being president of the company, has been acting as general manager of this division. Mr. Lindell, formerly mine manager of the company's Jeffrey mine, will make his division headquarters in Asbestos. As general manager, he is responsible for all of the Asbestos Fibre Division's operations, including production and sale of asbestos fibre, exploration for new sources of fibre and overall supervision of the Jeffrey mine (Quebec) and Munro mine (Ontario) activities.

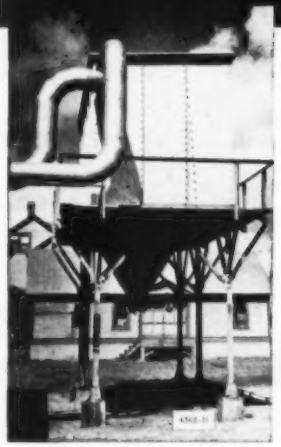
Mr. Lindell joined Canadian Johns-Manville in 1945 as mine superintendent at the company's Jeffrey underground mine and was subsequently named plant engineer and then mine manager. Before coming to Johns-Manville he had been associated with the Royal Tiger Mines in Colorado and the International Nickel Company of Canada, Ltd.

E. W. CAREY has resigned as vice-president and director of personnel of the U. S. Gypsum Company, Chicago, effective December 1. After serving as general credit manager and controller of U. S. Gypsum, Mr. Carey spent 14 years in the sales division as district sales manager, division sales manager, and general dealer sales manager, with supervision of all the firm's sales offices. He was appointed director of personnel in 1948, and was elected a vice-president in 1949.

Among the members recently elected to the board of directors of the Building Trades Employers' Association of Milwaukee, Wis., are LESTER PRANGE, Tews Lime & Cement Company, for the building material group, and HENRY JAEGER, Jaeger Sand & Gravel Company, for the sand-and-gravel group.

ROBERT A. MCCLEVEY JR. was recently appointed assistant mining superintendent in charge of the Noralyn (Fla.) mine of the International Minerals & Chemical Corporation. Mr. McClevey, who was formerly chief engineer for the Sunlight Coal Company, Boonville, Ind., has been engaged in strip mining work since 1935.

SLY PIONEERS and LEADERS IN DUST CONTROL



WE EMPLOY
NO SALESMEN
BUT
MATURE
ENGINEERS
are at your service without obligation

BRANCHES IN:
NEW YORK CHICAGO PHILADELPHIA SYRACUSE
DETROIT BUFFALO CINCINNATI ST. LOUIS
INDIANAPOLIS BIRMINGHAM LOS ANGELES TORONTO

A proper application of Dust Control Equipment to your needs is definitely a Science.

Your Sly Engineer, backed by an experienced Technical Staff at the home office, brings that Science to your door.

It costs NO MORE (sometimes LESS) and you are assured of many years of *completely* Dustless Service.

THE W. W. SLY MANUFACTURING CO.
4745 TRAIN AVENUE CLEVELAND 2, OHIO

J. FRANCIS HANSSEL, sales manager of insulation for the Federal Portland Cement Company, Buffalo, N. Y., has been named chairman of the certification committee of the Industrial Mineral Wool Institute. The appointment was made by Glen Christner, president of the organization.

CRIS DOBBINS of Denver, executive vice-president and general manager of the Ideal Cement Company, has been named chairman of a committee to select a new president of the Portland Cement Association. The committee has been instructed to select a successor for the post left vacant through the death of Frank T. Sheets. For the last 14 years of the 18-year period of his service with P.C.A., Mr. Sheets had served as its president.

National Gypsum Company has announced that general sales manager JOHN W. BROWN has been made a top sales executive, reporting directly to the president. To assist Mr. Brown, the position of assistant general sales manager was created, which was filled by WADE W. HILDINGER. Vice-president DEAN D. CRANDELL, previously in charge of general sales, will now devote full time to export, industrial, and contract sales, including the development of more products and wider markets.

Mr. Brown joined National Gypsum in 1935 as a general line salesman and graduated to district manager at Dallas. He then came to the company's executive offices as general sales manager.

Mr. Hildinger joined the firm in 1942 as a general line salesman in Oklahoma and successively worked his way up through the positions of district sales manager and director of trade relations. He held the latter position at the company's Buffalo executive offices.

Mr. Crandell has been with National Gypsum since 1927, when he took charge of research for the firm. In 1944 he became vice-president in charge of research and four years later took command of all sales activities. He is a director of the National Gypsum Company.

FRANK D. DAVIS has been appointed to fill the position of public relations manager for the National Gypsum Company. This post was recently vacated by David A. White, Jr., who is now serving with the United States Air Force. Mr. Davis will have headquarters at the firm's Buffalo executive offices.

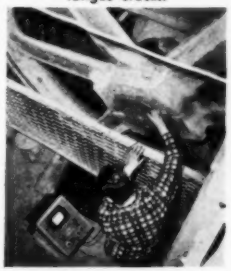
Before joining National Gypsum, Mr. Davis was public relations director for Davis and Elkins College, Elkins, W. Va. He will handle special events for the company, in addition to routine public relations activities.

MELVIN H. BAKER, president of the National Gypsum Company, Buffalo, N. Y., has been elected chairman of the board of directors of the Buffalo Redevelopment Committee, Inc., organized to promote use of private capital for redevelopment of sub-standard housing areas in the city.

STOP COSTLY BREAKDOWNS

WITH SPERRY ULTRASONICS

Inspecting drill bits for possible fatigue cracks.



Inspecting the main shaft of a 48- by 60-in. jaw crusher.

The unexpected breakdown of quarry equipment has long been a costly and unpredictable expense.

The Sperry Ultrasonic Reflectoscope, the newest most advanced non-destructive testing instrument, is now being used for maintenance inspection without the necessity of time-consuming dismantling or moving of equipment to special locations.

By testing critical equipment at reasonable intervals, fatigue cracks can be detected and their subsequent growth followed, thus allowing an opportunity to schedule replacement or repair when production is least affected.

Inspections have been made successfully for several years on such equipment as—railroad axles, ship's stern frames, hoisting engine crankshafts and crankpins, sheave axles, hydraulic press cylinders, pressure and back up rolls and in most cases without time losses due to dismantling.

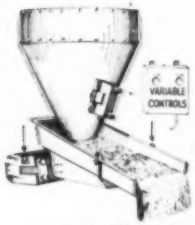
Write for complete descriptive information on day to day commercial testing service, sale or lease of the Sperry Ultrasonic Reflectoscope.

Sperry **SPERRY PRODUCTS, INC.**
Danbury, Connecticut

SYNTRON

"Vibra-Flow"

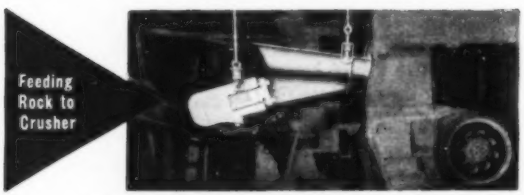
VIBRATORY FEEDERS



Provide Instant Control from A Gushing Torrent to A Trickling Dribble

—feeding most all types of bulk materials—fine, lumpy, abrasive—hot or cold—dry or damp—at variably controlled rates, from pounds to hundreds of tons per hour. To mixers, blenders, belts, crushers, screens, ovens, driers, packaging machines, etc. With exceptionally low maintenance costs due to absence of motors, pulleys, gears, cams, sprockets, chains and other wearing parts.

Flat pan and tubular feeders, screening and grizzly feeders, picking tables—and a host of other types available.



Write for Catalog Data

SYNTRON COMPANY

385 Carson Avenue Homer City, Penna.

The formation of a new exploration department and a new sales and merchandise department as parts of Johns-Manville's expansion program in Canada has been announced by Karl V. Lindell, vice-president of Canadian Johns-Manville Company, Ltd., and general manager of the Asbestos Fibre Division.

GEORGE K. FOSTER, vice-president of Canadian Johns-Manville, will head the exploration department and JOHN C. KELLEHER, also a vice-president, becomes sales and merchandise manager of the Asbestos Fibre Division.

Mr. Lindell also announced the following additional promotions in the Asbestos Fibre Division:

HAROLD S. DEELEY, formerly Jeffrey mine production superintendent and a J-M Quarter Century Club member, brings to his new post of division engineer has 26 years of experience in mining and production at the Jeffrey mine.

ROBERT D. BAKER, who continues as manager of the Munro mine, near Matheson, Ont., joined the company in 1946 as a mining engineer at the Jeffrey mine. In January, 1950, he was elevated to his present post.

PAUL A. FILTEAU, who has held positions of responsibility in the engineering department of the Jeffrey mine since May, 1939, was appointed Public Relations Officer at Asbestos in November, 1949, and now assumes wide duties as public relations supervisor for the division.

The following promotions of Jeffrey mine personnel at Asbestos were announced:

CHARLES D. BORROR, who joined Johns-Manville in May, 1928, as a mining engineer, now becomes technical assistant to the Jeffrey mine manager.

STUART K. BRIGHAM, who joined the company at Toronto, Ont., in October, 1945, as a staff engineer, takes the post of plant engineer.

HECTOR H. WALLER, who has been assistant underground mine superintendent at Asbestos, Que., is now underground mine superintendent.

ROBERT T. COOK, formerly general foreman of the underground mine, was appointed assistant underground mine superintendent.

Headquarters of the Asbestos Fibre Division will be located at Asbestos, Que., Mr. Lindell said, adding that the Exploration Department, the Sales and Merchandise Department and Comptroller's office will continue at Montreal.

J. P. EYRE PRICE, president of the Wyoming Sand and Stone Company, Scranton, Pa., and former Scranton regional manager of the World War II War Production Board, has been appointed chairman of the Scranton Scrap Mobilization Committee.

E. W. CLAAR has been appointed manager of Eastern Clay Products Department of International Minerals and Chemical Corporation, Chicago, according to Norman J. Dunbeck, vice-president of the corporation in charge of the Industrial Minerals Division.

Mr. Claar was formerly central dis-

trict manager of Eastern Clay Products, Inc., which was recently acquired by the International Minerals and Chemical Corporation.

F. E. Bellamy, chairman of the board of the Concrete Materials and Construction Company, Cedar Rapids, Ia., has announced the following promotions in the executive personnel of the company: K. K. Kinsey, former secretary of the firm has been named general manager, succeeding S. P. Moore; Gene M. Mason, general sales manager; Marvin Nelson, general production manager; William C. Wheeler, chief engineer; and Calvin Moore, division sales manager. S. P. Moore will continue to serve in the capacity of president.

The Great Lakes Carbon Corporation, New York, N. Y., has appointed Donald W. Tait advertising manager of its Perlite Division, according to Donald H. Gott, general sales manager for building products. Mr. Tait was formerly with the Chase Brass and Copper Company, Waterbury, Conn.

John H. Niermeyer, president of the Columbus Coal and Lime Company, Columbus, O., has been elected president of the Building Material Dealers Association of Columbus. Robert G. Kern, executive vice-president of Columbus Builders Supply, Inc., Columbus, was appointed vice-president of the association.

J. C. Willey has been appointed assistant to the president of Harbison-Walker Refractories Company, Pittsburgh, Pa., according to an announcement by president E. A. Garber. Mr. Willey, son of Raymond Willey, former Harbison-Walker president, has worked with the company in a variety of operating and executive positions since 1934.

A graduate of Andover and Princeton, Mr. Willey started with Harbison-Walker in an operating job at the Clearfield works, where he later became foreman. After working for some time at the Hays Works, he was appointed superintendent of the Clearfield No. 3 Works in 1942. In 1947 he was transferred to the company's home offices in Pittsburgh, where he served as assistant to the vice-president.

Robert Marcato of Los Angeles has been appointed assistant general manager of ore sales, Great Lakes Carbon Corporation, Perlite Divison, Los Angeles, Calif., according to George Skakel Jr., vice-president and general manager of the division. Mr. Marcato has had several years' experience in building products sales.

Jack Kelley, former industrial sales representative for the National Gypsum Company in Philadelphia, has been promoted to the position of sales manager of lime and limestone products in the firm's industrial division. Mr. Kelley has been with National Gypsum since 1948.

NEED TO HANDLE LARGE QUANTITIES OF SAND AND GRAVEL AT LOW COST?

CONSULT YUBA on the feasibility of using bucket-ladder dredges to move sand and gravel. More than 40 years of experience proves that bucket-ladder dredges can move big yardages at remarkably low costs. Two case histories show the redesigning and rebuilding possibilities . . .

CONSTRUCTS DIVERSION CHANNEL

YCGF No. 16, built by YUBA in 1916 with 18 cu. ft. buckets and 77 ft. digging depth, later was equipped with two stacker ladders to pile tailings in parallel rows about 500 ft. apart, forming diversion channels for flood control while dredging alluvial gravel. In 1930, YCGF No. 16 was redesigned, moved to Folsom, Calif. and rebuilt as Capital No. 3 for 62½ ft. digging depth.

REBUILT 3 TIMES

Capital No. 2 (later Biggs No. 2), built in 1906 as YCGF No. 3, has been redesigned and rebuilt 3 times and used in three different areas with digging depths changed as needed from 60 feet to 50 feet, then to 47 feet below water. Bucket speed was increased from 18.6 to 22.8 feet per minute; bucket capacity increased from 7 to 9 cu. ft., and daily average running time upped from 18.3 to 22.1 hours.

Use bucket-ladder dredges for such jobs as these: changing stream channels, constructing levees, cofferdams or canals; digging deep ground, clay, boulders or bedrock; handling sand and gravel.

Let YUBA help you work out any such problem. We will design and build a new dredge for you; help you find a used dredge; move, redesign and rebuild any dredge you now own, whether YUBA-built or not. Wire, write or call us—without obligation, of course.

YUBA DREDGES

YUBA MANUFACTURING CO.

Room 718, 351 California St., San Francisco 4, Calif., U.S.A.

AGENTS { SIME, DARBY & CO., LTD. · SINGAPORE, KUALA LUMPUR, PENANG.
SHAW DARBY & CO., LTD., 14 & 19 LEADENHALL ST., LONDON, E. C. 3.

CABLES: YUBAMAN, San Francisco · SHAWDARBCO, London

trade notes

R. M. Casper has been appointed manager of the newly-formed power department of Allis-Chalmers Company of Milwaukee, which combines the electrical and mechanical power departments. He formerly was manager of the company's electrical department.

Other new power department appointments are as follows: F. W. Bush, former assistant manager of the electrical department manager in charge of electrical sections; C. C. Jordan, former manager of the steam turbine section, manager in charge of mechanical sections; R. N. Miers, former manager of the sales section of the steam turbine department, manager of the steam turbine section; C. R. Braun, former assistant to the manager of the mechanical power department, assistant to Mr. Casper; E. J. Schiebenes, previously office manager of the steam turbine department, office manager of the power department.

As a part of the organizational change, the centrifugal pump department also became a section of the power department under the management of H. P. Binder, a position held since 1942.

Look for this sign

AUTHORIZED AIRCO DEALER

when you want

finest welding and cutting equipment ... dependable service and deliveries

The local Airco dealer carries a complete line of Airco equipment and supplies. High-purity oxygen, acetylene and other gases ... calcium carbide ... gas cutting or welding machines and supplies ... arc welders, electrodes and accessories ... he'll deliver anything you need from stock, direct to your door. He's part of a nation-wide Airco organization that has been set up to supply you promptly, regardless of your location.

So, remember, for all your oxyacetylene welding and cutting and arc welding needs, look for the Airco Authorized Dealer. You'll find him listed in your Classified Telephone Directory under *Welding Equipment and Supplies* today. He'll be glad to help you select the proper Airco equipment for any job.

AUTHORIZED AIRCO DEALER

AIR REDUCTION

AIR REDUCTION SALES COMPANY · AIR REDUCTION MAGNOLIA COMPANY
AIR REDUCTION PACIFIC COMPANY
REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL
Divisions of Air Reduction Company, Incorporated
Offices in Principal Cities

Recently appointed exclusive distributor and representative in Indiana for the Koehring Company of Milwaukee, the A. F. Deaney Company of Indianapolis will handle the complete Koehring line of heavy-duty construction equipment. In addition to Koehring products, the firm also represents the C. S. Johnson Company of Champaign, Ill., and the Parsons Company of Newton, Ia., both Koehring subsidiaries. A. F. Deaney is president of the organization and Ralph Riddle is in charge of sales. The Deaney Company office, sales and service departments are located at 719-721 North Pine Street in Indianapolis.

W. G. Turner

W. G. Turner, former regional manager, Cummins Engine Company, Southeastern Region, with headquarters at Atlanta, has been transferred to Cleveland as regional manager, Great Lakes Region.

Mr. Turner was appointed manager of the Southeastern Region in 1948. Previously he served as assistant manager for the Eastern Region, New York City. He joined the Cummins sales force in 1947 after experience in the sales department of Marion Power Shovel Company, Marion, O.

John W. Belanger and Nicholas M. DuChemin have been elected vice-presidents of the General Electric Company. Concurrently, Mr. Belanger was appointed general manager of the company's newly-created Defense Products Division. Mr. DuChemin was recently placed in charge of the company's Manufacturing Services Division.

Mr. Belanger began his career with G-E in August, 1917, and Mr. DuChemin

Cantwell Clark, manager of the planning section of the DuPont Company's Nylon Division since 1947, has retired. Mr. Clark joined DuPont in 1915 as an assistant engineer in the engineering department of the Barksdale, Wis., commercial explosives plant. Later he became associated with DuPont's rayon operations, and served as superintendent at the Yerkes plant, Buffalo, N. Y. In 1945 he was appointed manager of the Martinsville, Va., nylon plant, and subsequently manager of the planning section.

Sterling Electric Motors, of Los Angeles, Calif., has announced appointment of the following additional distributors: Allied Bearings Supply Co., 822 South Boulder, Tulsa 5, Okla.; Berry Electric Co., 301 S. 3rd St., Walla Walla, Wash.; Alabama Bearings Co. Inc., 7 Railroad St., Montgomery, Ala.; Stanley Electric Motor Co., 1520 E. Miner Ave., Stockton 5, Calif.; and Roy A. Berentz Co. Inc., 1400 Carr, P.O. Box 564, Houston 1, Tex.

For the first time in its history, the New Jersey State Safety Council presented its radio safety Award of Merit to an industrial concern, the Thermoid Company of Trenton, N. J. Thermoid received the award for its sponsorship

• Scene at festivities in which Thermoid received the state safety award.

of 100 hours on NBC's station WTTM, devoted to promoting highway, plant, and home safety during July and August.

The award was made for "outstanding accomplishment in the field of public information on accident prevention covering all areas of activity, performed through the Thermoid Safety Campaign and Highway Cavalcade on Radio Station WTTM, Trenton, N. J., during the summer of 1951."

St. Regis Paper Company officials have announced the beginning of construction on addition to its multiwall bag plant at Pensacola, Fla. The expansion of the present bag plant comprises a two-story addition, 360 by 144 ft., and a one-story office section addition, to house bag division services. The new facilities are expected to be available for production late in 1952.

Fred Schluter, president of Thermoid Co., Trenton, N. J., announced that his concern has acquired stock control of the Essex Rubber Co., also of Trenton.

Essex was founded in 1907 and from an original investment of $2,500 has grown to present annual sales of approximately $3,000,000. Thermoid which had sales of $30,000,000 in 1950, operates plants in five states.

The appointment of Baker Equipment Engineering Company as representatives for the Yale line of materials-handling machinery in the Charleston, W. Va., marketing area has been announced. From offices in Charleston, Huntington, Bluefield, and Clarksburg, sales engineers of Baker will serve industries in the selection and application of materials-handling equipment to speed production and lower handling costs of manufactured goods.

Baker Equipment has been active in the transportation industry for over 15 years. It is headed by Charles Foutche, president, and maintains a central office at 404 Morris Street, Charleston.

American HAMMERMILLS OFFER...
"ACS Series"
Made in 4 sizes and two types. Capacity to 250 T. P. H.
Front Feed — For minimum of fines.
Center Feed — For maximum of fines. (Illustrated at left)
...A Size for Every Tonnage
"30 Series"
Made in 4 sizes. Capacity up to 100 T.P.H.
...from Roadstone to Agstone
"24 Series"
Made in 4 sizes. Capacity up to 30 T. P. H.
Write for Bulletin—"Better Stone Crushing"
American PULVERIZER COMPANY
Originators and Manufacturers of Ring Crushers and Pulverizers
1059 Macklind Ave.
St. Louis 10, Mo.

J-M Industrial Friction Materials are the No. 1 choice of most leading manufacturers of earth-moving equipment

Friction materials are so vital to smooth and satisfactory machine performance that most manufacturers choose them with utmost care.

They look for the *correct* combination of operating characteristics and maximum wear. That is why the majority of manufacturers of earth-moving equipment find exactly what they need in Johns-Manville Industrial Friction Materials.

Time and again, J-M Industrial Friction Materials have set records for endurance and low-cost operation. That's not surprising, for J-M friction products are engineered for the job. Whether in block, lining, facing or cone form, they are formulated for maximum service life and top performance.

When it's time to replace clutch and brake friction materials on your own machines, take a tip from the manufacturers and specify Johns-Manville. In that way you can be sure that your equipment will continue to give the excellent service the maker built into it.

Write for your copy of "Johns-Manville Industrial Friction Materials" FM-12A. It contains a wealth of important application and performance data. Address: Johns-Manville, Box 290, New York 16, N. Y.

JM

Johns-Manville

INDUSTRIAL FRICTION MATERIALS

No. 1 With Leading Manufacturers

Link-Belt Company announced that it has opened a new factory branch store at 108 South Fourth West Street, Salt Lake City 1, Utah. The new store and sales office is headed by Donald W. Newsome, district manager, transferred from the company's San Francisco plant. He will be assisted by Harry Hotchkiss, who until recently was on the staff of the Link-Belt store and warehouse in Spokane, Wash.

Peerless Engineering Sales Ltd., Toronto, representative for Reeves Variable Speed Drives in Canada, has opened a branch office and warehouse in Montreal, Quebec, at 1231 Ste. Catherine St. W. A complete line of Reeves units and replacement parts will be carried in stock at the new branch. Len Hackert, who has been a member of the Toronto sales staff for many years, is the new branch manager for the Montreal office.

Malcolm Jones and Robert F. Morgan, both formerly specialists in Allis-Chalmers processing machinery department, have been named to general machinery division district offices as sales representatives.

Mr. Jones, now in the company's Denver district office, came to Allis-Chalmers in 1949. Mr. Morgan has been assigned to the Syracuse district office. He has been with Allis-Chalmers since 1948.

William Irrgang was recently elected executive vice-president of the Lincoln Electric Company.

He started with Lincoln in 1929 and for the last 23 years has been engaged in various phases of plant operation. As a methods engineer, he developed manufacturing methods and machinery for reducing the cost of welding electrodes. For the past six years as director of plant engineering, he supervised the improvement in welding machine manufacturing methods which have been installed in Lincoln Electric's new plant. His department has had charge of the entire plant engineering project of Lincoln's new factory.

The appointment of Eighmy Equipment Company, Pierpont at West State Street, Rockford, Ill., as distributor for Nordberg 4FS diesel engines in the northwestern and central section of Illinois has been announced by Nordberg Manufacturing Company, Millwaukee 7, Wis.

Eighmy Equipment Company was established in 1940 with B. O. Eighmy, former sales manager Link-Belt Speeder Corporation, as president. Mrs. L. M. Eighmy is secretary-treasurer of the organization.

The company maintains a machine shop under the direction of Harry Spieser, service manager, and has a complete parts department managed by Marvin Stieger. The sales and service facilities of Eighmy Equipment Company are housed in a building occupying some 8,000 sq. ft. of floor space. In addition, the organization has three acres of demonstration ground and storage facilities west of Rockford.

J. F. Ansink

John F. Ansink has been elected vice-president of the Round Chain and Manufacturing Company.

Mr. Ansink has been general manager of Round Chain since its formation two years ago, and will continue in that capacity. Previously he had been Chicago district manager of the Cleveland Chain and Manufacturing Company, a Round Chain subsidiary.

W. A. Rundquist

W. A. Rundquist, sales promotion manager for Pioneer Engineering Works, Minneapolis, Minn. has been appointed director of advertising and public relations for Poor and Company, Chicago, Ill. Pioneer Engineering Works is a subsidiary of the latter.

Mr. Rundquist received his degree in mechanical engineering from North Dakota State College and then held positions with the Bell Telephone Laboratories, New York, and Minneapolis-Honeywell, Minneapolis. During World War II he was with the Army Engineers, and since then has been in charge of advertising and sales promotion activities for Pioneer Engineering Works.

Appointment of F. Charles Ruling as manager of the Atlantic District of General Electric Company's Apparatus Sales Division has been announced. Mr. Ruling will be responsible for the sale of G-E apparatus products in Virginia, West Virginia, Maryland, and Delaware, most of Pennsylvania, and portions of New Jersey, North Carolina, and Ohio. His headquarters will be in Philadelphia.

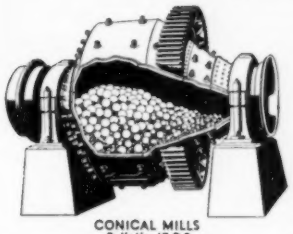
James J. Fitzgibbon of Charleston, W. Va., has succeeded to Mr. Ruling's former position as manager of the G-E apparatus sales office in Washington, D. C.

Roderick H. Clark has been appointed sales manager of the Sterling Division of the White Motor Company, Cleveland, O. He will make his headquarters at the Sterling Division plant in Milwaukee. Mr. Clarke came to the White Motor Company's Sterling Division from the Autocar Company, where he formerly served as assistant to the president.

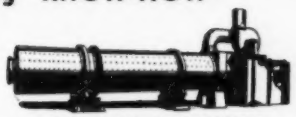
Harold H. Lurie, chief metallurgist, Cummins Engine Company, Columbus, Ind., has been named a member of a six-man metallurgical advisory board to assist the United States Navy on a special technical project.

MATERIAL PROCESSING EQUIPMENT

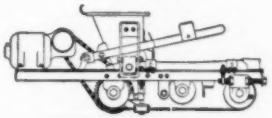
. . . plus Engineering "KNOW-HOW"



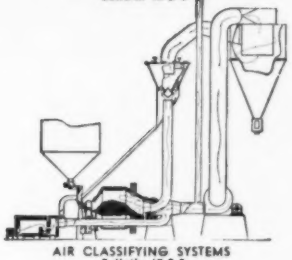
CONICAL MILLS
Bulletin 17-B-8



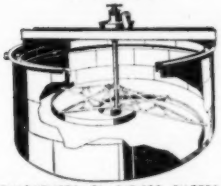
ROTARY DRYERS, KILNS, COOLERS
Bulletin 16-D-8



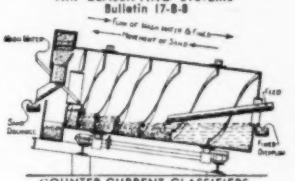
CONSTANT-WEIGHT FEEDERS
Bulletin 33-D-8



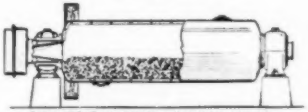
AIR CLASSIFYING SYSTEMS
Bulletin 17-B-8



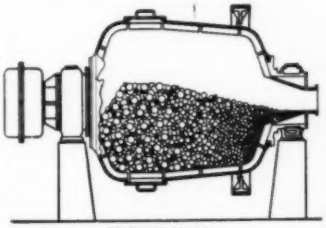
THICKENERS, CLARIFIERS, FILTERS
Bulletin 35-C-8



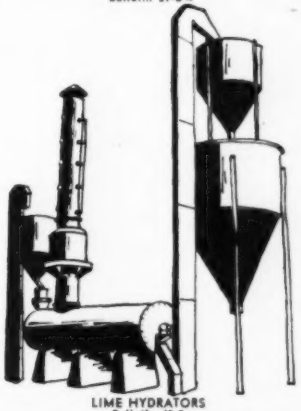
COUNTER-CURRENT CLASSIFIERS
SAND WASHERS
Bulletin 39-B-8



CYLINDRICAL, TUBE AND ROD MILLS
Write for Bulletin



TRICONE MILLS
Bulletin AH-414-8

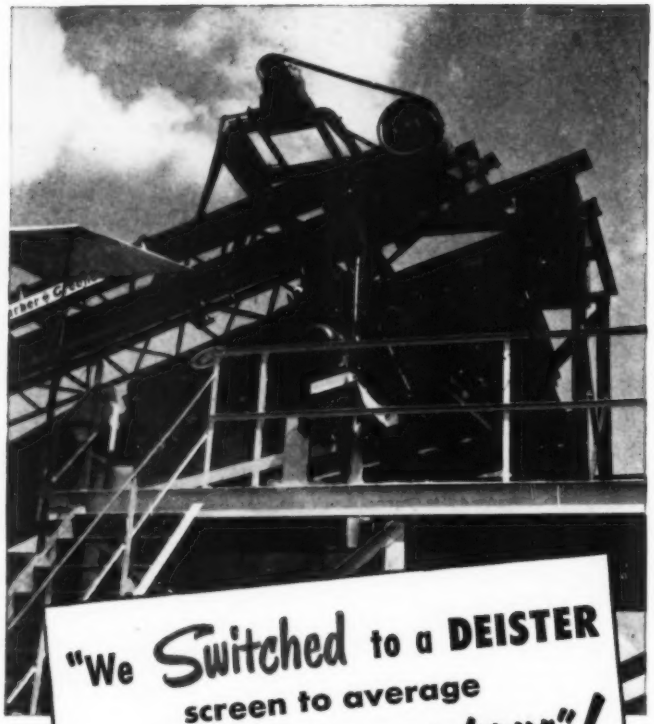


LIME HYDRATORS
Bulletin 49-B

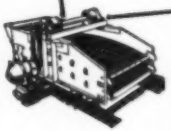
HARDINGE
COMPANY, INCORPORATED

YORK, PENNSYLVANIA—240 Arch St. Main Office and Works

NEW YORK 17 • SAN FRANCISCO 11 • CHICAGO 6 • HIBBING, MINN. • TORONTO 1
122 E. 42nd St. 24 California St. 205 W. Wacker Dr. 2016 First Ave. 200 Bay St.



"We Switched to a DEISTER screen to average ...120 tons per hour"!



One of the most modern, all-steel plants in the Mid-West . . . You can tell that from this photograph. And the Miller Brothers Gravel Company, plant, at West Milton, Ohio, is modern and efficient because the Millers, Bill and Dale, spent months inspecting other operations and comparing notes before they built this one.

The screen they SWITCHED to is a Deister 4' x 10' double-deck Vibrating Screen.

Says Mr. Miller:

"We made a complete survey and visited many plants. Every Deister Screen user we talked to was pleased with the performance—and particularly with the flexibility in changing cloth. That means a lot to us because we have to make many sizes to meet the wide range of specifications called for today."

As a result, the Millers, who never before had owned a Deister, switched makes to assure an average 120 tons an hour, and to handle up to 190 tons per hour. And they've never had cause to regret it, they are frank to say. Deister Vibrating Screens offer you more advantages for BETTER SIZING — CHEAPER than any other screens you can buy. Be sure to learn the story before you buy.

Flow of Work—Trucks dump into 7' grizzly at the hopper. A mechanical feeder throws it on a 69-foot power conveyor which discharges onto the 4' x 10' double-deck Deister, which usually carries a 2-inch mesh on the top deck, 1-inch mesh on the bottom deck. Oversize recirculates through a cone crusher where it is returned, via a 42 foot long conveyor onto the main power conveyor belt. Sized material is carried on a 40-foot conveyor to a steel bin for truck loading . . .

That's real efficiency in handling material . . . a system that averages 120 tons per hour, handles up to 190 tons per hour.

DEISTER SCREENS

Booths 53 and 54
Conrad Hilton (Chicago)

DEISTER MACHINE COMPANY
FORT WAYNE 4, INDIANA

Ray Davis

R. F. Davis, former assistant regional manager, Cummins Engine Company with headquarters at Chicago, has been promoted to regional manager, Eastern Region, with offices in the Chrysler Building, New York City. Mr. Davis has been employed by Cummins since 1942. In 1947 he became manager of engine sales, and held this post until 1948, when he joined the regional organization.

The Canadian business of the American Air Filter Co., Inc., Louisville, Ky., will be handled by American Air Filter of Canada, Ltd., Montreal. William G. Hole, formerly of Darling Bros., Ltd., will be in charge of all Canadian operations. Representatives will be established in the larger Canadian cities to handle the A.A.F. line of air filters, electronic precipitators, and Roto-Clone dust collectors.

Three new appointments have been made in the Research and Development division of Olin Industries, Inc. All were assigned to the Explosives Department at East Alton, Ill.

Dr. R. A. Cooley, is a former Navy commander who did technical liaison work on propellant powders during the war, followed by several years as supervisor of the propellants section at the Naval Ordnance Test Station.

H. L. Wolsted named to the dynamite group of the Explosives Department, was formerly production supervisor at Monsanto's J. F. Queeny plant in St. Louis, Mo. Previously he had worked at the Kankakee Ordnance Works and the Wabash River Ordnance Works.

J. M. Mandas took his degrees at St. Ambrose College and Iowa State College.

R. Robert Zisette, Gunnar Palmgren, Eric C. Brodin, and Karl Kesselring have been elected vice-presidents of S K F Industries, Inc.

Mr. Zisette is in charge of sales, advertising and market research; Mr. Brodin heads manufacturing development; Mr. Palmgren will supervise engineering and research; and Mr. Kesselring will handle production. All four make their headquarters at the company's Philadelphia Plant No. 1.

R. E. Howard has been appointed comptroller and assistant treasurer of the Davey Compressor Company, Kent, O. For the last six years Mr. Howard has been manager of the company's internal orders and invoicing departments.

Appointment of H. Barden Allison as district sales manager of the Philadelphia branch, mechanical goods division, United States Rubber Company, has been announced. Mr. Allison succeeds A. B. Means who continues in the capacity of sales advisor.

Major changes in the Barber-Greene sales organization have been announced by W. B. Greene, president.

W. B. Holder, formerly general sales manager, will head a new division of the company, plans for which are now being formulated. E. H. Holt will become general sales manager, responsible for overall sales policy and in direct supervision of the sales organization. J. D. Turner, becomes director of publicity and promotion, and will supervise publicity and advertising and, in addition, will work on the formulation of overall sales policy and sales promotion.

E. H. Holt

J. D. Turner

Two appointments in the Service Department of Caterpillar Tractor Co., Peoria, Illinois, were announced recently.

Victor A. Woodling has been appointed service development manager, and Robert H. Hawkins succeeds him as dealer publications supervisor. Mr. Woodling joined Caterpillar in 1946 after four and one-half years in the armed forces.

Mr. Hawkins joined Caterpillar in June, 1950, after having been an instructor in service training.

J. B. Laramy has been appointed manager of the marketing research department of Worthington Pump and Machinery Corporation, Harrison, N. J., according to an announcement. He has been assistant manager of Worthington's Chicago district office for the last six years.

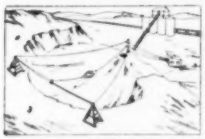
Sam Littlejohn has been elected commercial vice-president of the General Electric Company. Formerly manager of the Atlantic district office of the company's apparatus organization in Philadelphia, Mr. Littlejohn will be engaged in customer relations activities, with headquarters in Cleveland, O.

Wenzel A. Lindfors has been appointed sales manager of the New York Belting Company, Passaic, N. J. In his new position he will direct all sales for the company's line of industrial rubber products.

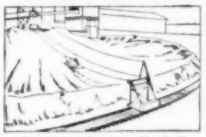
Carl H. Rinne has been named general manager of the General Electric Company's specialty transformer and ballast department at Fort Wayne, Ind. He succeeds William C. Wichman, now general manager of the company's Component Products Division. Mr. Rinne joined G. E. in 1930.

Only **SAUERMAN OFFERS ALL THESE LONG RANGE MACHINES**

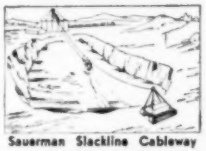
Sauerman Scraper stores and reclaims 150,000 tons of stone on space between dock and cement mill.



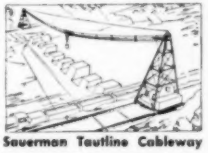
Sauerman Scraper Excavator



Sauerman Scraper Stockpiler



Sauerman Slackline Cableway



Sauerman Tautline Cableway

Sauerman Tower Excavator

FOR MORE than forty years the main Sauerman business has been the designing and building of cable-operated excavators and conveyors that overcome the difficulties and reduce the costs of moving materials over large areas. Among the best known of these Sauerman machines are the following:

Drag Scraper Excavator — An economical machine for pit and hill excavation, rehandling industrial wastes, cleaning out ponds and general long range earthmoving. It is a powerful excavator and a rapid conveyor.

Drag Scraper Stockpiler — For bulk storage, Sauerman engineers have developed a series of drag scraper machines that make storing and reclaiming an easy one-man job. These machines are giving satisfaction in handling all kinds of materials both indoors and outdoors.

Slackline Cableway Excavator — This unique machine has no equal for work that requires digging deep and far and conveying to a high delivery point. In a wet gravel pit, for instance, it reaches under water, comes up with a heaping load of gravel, and lifts its load to the top of the plant, delivering thirty to forty loads an hour.

Tautline Cableway — This is a long range aerial crane designed for all jobs of lifting, conveying and placing loads of unwieldy materials. It is used in quarries and open pit mines to lift and carry big chunks of stone and ore.

Other Sauerman Machines—Sauerman also builds Tower Excavators and Scraper-Loaders for work requiring machines that move along as they dig.

Literature—Tell us which of the above machines interests you and we will send concise, easy-to-read catalogs giving you detailed information.

Rope Haulage Equipment Specialists Since 1909

SAUERMAN BROS., Inc.

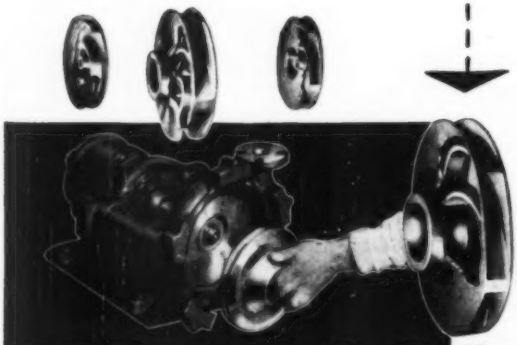
534 S. CLINTON ST. CHICAGO 7, ILLINOIS

10 TONS PER HOUR OF PERLITE ORE.....SIZED THROUGH A 4-DECK SWECO SEPARATOR

That's the story of the SWECO Separator installed at Napa Perlite, St. Helena, California. It was chosen for the accurate sizing of perlite ore after exhaustive tests. Through months of service the SWECO Separator has proven itself in this installation by continuously dependable performance in sizing at a rate considerably above the capacity of any other known screen device of comparable screen area. Write for complete details of the SWECO Separator; it can help solve your screening problems.

The **SWECO SEPARATOR**

Division of **SOUTHWESTERN ENGINEERING COMPANY**
4800 SANTA FE AVENUE • LOS ANGELES 58, CALIFORNIA



Will The Impeller Handle Your Job?

IT WILL if it's job-specified by Nagle . . . And at less cost per gallon or pound of material handled! Nagle impeller design holds sharp re-entrant angles to a minimum, cuts individual points of wear. You'll minimize stuffing box troubles, too, with relief holes that place the stuffing box in communication with lowest pressure area of the impeller. Face seals cut efficiency loss from internal leakage and protects the stuffing box from grit. This important attention to design details is found throughout every Nagle Pump—your assurance of longer pump service at less costs. If you have an abrasive or corrosive pumping problem, get the complete Nagle story!

Nagle Pumps, Inc.
INDUSTRIAL PUMPS FOR ABUSIVE APPLICATION
1257 CENTER AVE. CHICAGO HEIGHTS, ILL.

Stockholders of The Four Wheel Drive Auto Company re-elected Walter A. Olen president of the company for the 42nd time. Robert A. Olen was re-elected vice-president and general manager; Donald S. DeWitt, vice-president; S. H. Sanford, secretary; James A. Driessen, treasurer and assistant general manager; Donald M. Russell, assistant treasurer and Helen Weller, assistant secretary.

Alex J. Night, Allis-Chalmers hoist engineer, recently retired after being associated with the company for over 42 years.

Mr. Night joined Allis-Chalmers in January, 1909, and has been continuously associated with its processing machinery department. He is credited with various patents which have been assigned to Allis-Chalmers and has written articles on hoisting for technical publications.

Bemistory, the employee magazine of the Bemis Bro. Bag Co., St. Louis, has received one of three Awards of Excellence in the magazine division of the annual competition of the Society of Associated Industrial Editors.

Link-Belt Company has announced the appointment of Bert L. Pearce as chief engineer of the Ewart plant in Indianapolis, to succeed Charles R. Weiss, who has retired after 42 years' service at the company's Philadelphia and Indianapolis plants. Russell T. Sweeney has been appointed asst. chief engineer.

E. M. Young

Appointment of E. M. Young as manager of Mack Motor Truck Corporation's Charlotte, N. C., district has been announced. Mr. Young, who since 1944 has been assistant to the manager of the truck company's Southern Division, Atlanta, joined Mack in 1924 as an assistant cashier at Knoxville, served the company in its Miami, Nashville and Charlotte offices before making his headquarters at Atlanta.

Replacing Mr. Young as assistant to the Southern Division manager at Atlanta is John Steinhauer, who since 1949 has been a salesman in the company's Atlanta territory.

Boston Woven Hose and Rubber Company, Cambridge, Mass., has broken ground for a new $1,000,000 rubber reclamation plant.

Using an air separation process developed by company engineers, the new factory will help to conserve scarce rubber supplies by extracting all usable material from scrap auto tires, and other waste rubber. The entire output will go into the company's own manufacturing operations, which include a large volume of government orders. It is expected that the plant will be completed sometime in the second quarter of 1952.

Ray-Brooks Machinery Company, Inc., Montgomery, Ala., and the Tractor & Equipment Company, Inc., Birmingham, Ala., were recently appointed distributors for Bucyrus-Erie Company's line of ⅜- to 4 cu. yd. gasoline, diesel, and single-motor electric convertible excavators, the 3-ton Hydrocrane, and the recently introduced Hydrohoe, according to an announcement by the manufacturer. Both firms also handle Bucyrus-Erie tractor equipment bull-graders, bulldozers, dozer-shovels and scrapers designed for use with International crawler tractors.

Tractor and Equipment Company serves the northern half of Alabama. Ray-Brooks Machinery Company, with branches in Mobile and Pensacola, serves a territory which includes the southern half of Alabama and that part of Florida west of the Apalachicola river. The territories are divided at the northern boundary lines of the counties of Sumter, Greene, Hale, Perry, Chilton, Coosa, Tallapoosa, and Chambers.

L. L. Meikle

Officials of the Lincoln Engineering Co., St. Louis, Mo., have announced the election of L. L. Meikle as president of the Lincoln Engineering Company of California.

As president of the California Corporation, Mr. Meikle will actively supervise the entire West Coast Division, comprising Arizona, California, Nevada, Oregon, Washington, and western Idaho. Mr. Meikle joined Lincoln of California in 1939 and has been general manager since 1941. He succeeds C. Homer Redd, who will be available to the St. Louis and California corporations in an advisory capacity.

The Jeffrey Manufacturing Company, Columbus, O., recently announced major changes in the industrial sales organization.

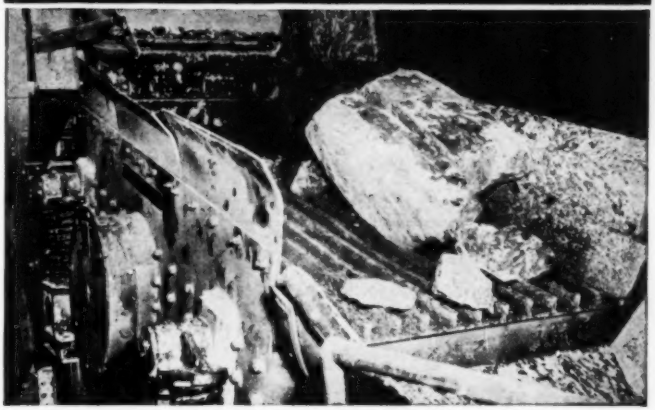
Lincoln Kilbourne, formerly manager of sales, Products Engineering Division, becomes manager of sales, Conveyor Division. C. G. Hawley, district manager of the Jacksonville office, replaces Mr. Kilbourne. L. Cole, sales engineer in the Columbus territory, has been named district manager of the Jacksonville office, replacing Mr. Hawley.

Paul Lawall, formerly district manager of the New York office, returns to Columbus as manager of sales, General Engineering Division. R. W. Sweitzer, district manager of the Philadelphia office, takes over Mr. Lawall's job in New York. W. K. Myers, district manager in Boston, moves to Philadelphia. Paul Hendry, who has been working out of the Milwaukee office, becomes district manager at Boston.

Dan Knies and A. W. Lemmon have been named consultant sales engineers of the Conveyor Division in Columbus.

INDISPENSABLE

FOR SCALPING—SIZING—CONVEYING



HEAVY DUTY SCALPER Talk about performance! This Hewitt-Robins Heavy Duty Scalper is handling 5 ft. cubes of 90 lb. material—11,250 lb. lumps—at the rate of 1000 tons an hour—and doing it in continuous 16-18 hour operation!

Its 2-bearing vibrator is "full floating"—no load damage to bearings or shaft. And this Scalper won't shake the building because heavy duty coil springs, which support the frame, absorb impact-vibration. A truly rugged machine for the toughest scalping jobs.

VIBREX STYLE M SCREEN For accurate, low-cost processing of the *sizes* you want, in the *capacity* you need, at the *speed* you must have. Vibrex® Screens use the "circle-throw" principle originated by Hewitt-Robins. Two positive strokes with every revolution of the counterweights. And the stroke is adjustable—at our factory or in your plant—as explained in Bulletin No. 122-B.

Made for overhead suspension or floor mounting—whichever best fits your needs.

SECTIONALIZED CONVEYORS Hewitt-Robins Sectionalized Belt Conveyors enable you to select a conveyor system *exactly suited to your needs* . . . in length, height, belt width and capacity. All components, including head and tail section, are Hewitt-Robins-engineered for top efficiency and low operating cost. Best of all, Hewitt-Robins makes both the conveyor machinery *and* the belt.

Remember—only Hewitt-Robins takes full responsibility for *all the elements* of a belt conveyor!

ROBINS CONVEYORS DIVISION

HEWITT-ROBINS INCORPORATED

270 PASSAIC AVE. • PASSAIC, N. J.

legal decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Recently a reader wrote as follows: "Four years ago we signed a 12-year lease contract with a property owner to pay a minimum yearly rental of $3,000, plus bonus payments for each 1,000 yards of sand and gravel removed from the premises. The lease contract contained a clause that we could cancel the lease contract without further obligations if the sand and gravel became exhausted due to clay beds or other similar obstacles. The sand and gravel has become exhausted and we are being sued by the property owner for eight years' rentals amounting to $24,000. What are our rights and obligations?"

According to a late higher court decision, this company must pay the property owner $24,000. This is so because the lease contract specifically limited cancellation of the lease contract.

These various and important points of the law were decided by the Supreme Court of New York in the leading case of *Bevin v. Henry Steers Sand and Gravel Company*, 219 N. Y. S. 14. The facts of this case are that a sand and gravel company leased real property from its owner for the purpose of digging therefrom sand and gravel. The term of the written lease was 10 years, and a clause specified a *minimum rental* of $6,000 per year. The contract contained another clause that the company could at any time cancel the lease by giving written notice to the owner of the property three months in advance "in the event that extended beds of clay be found upon the leased property within 50 feet of the natural surface of the ground, with the result that a deposit of sand or gravel of at least 12 feet in thickness is not available".

The sand company did not commence excavating the sand and gravel for almost two years after the lease contract was signed but paid the agreed $6,000 annual minimum rental. Three years after excavation started the sand company wrote to the owner of the premises explaining that all of the sand and gravel was exhausted, and removed its equipment from the premises and canceled the lease. The company refused to pay the minimum $6,000 annual rental for the balance of the 10-year lease. The owner of the property sued the company for the minimum of $6,000 for the remaining five-year period of the lease on the grounds that although the sand and gravel became exhausted, *no clay beds* had been discovered as specified in the contract.

The higher court held the company liable for payment of rentals for five additional years because the lease contract did not specifically state that no further rentals were payable if and when the sand and gravel became exhausted. This court said:

"The intention of the parties gathered from the entire instrument is to govern. . . . When an instrument is clear and unambiguous, we are not obliged to refer to 'practical construction' by the parties, or the abstruse reasons of learned courts concerning other leases and other agreements differing from that now before us. . . . The lease contains no provision for cancellation on the ground of exhaustion of sand and gravel. . . . The lease of the property was for 10 years, with an absolute covenant to pay a minimum rental of $6,000 per year in each year of the term. . . . It was only in case extended beds of clay were discovered upon the leased property . . . with result that a deposit of sand or gravel of at least 12 feet in thickness was not avail-

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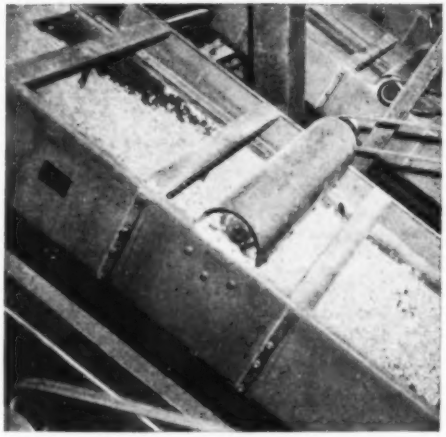
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able to the tenant, *in that case only was the tenant entitled to give three months' notice of his intention to cancel the lease.*"

In other words, since the lease contract specifically provided that the lease contract could be canceled when sand and gravel deposits were exhausted *if clay deposits* were encountered, the company could not cancel the lease contract merely because the sand and gravel deposits were exhausted, unless due to clay beds.

Therefore, it is quite apparent that lease contracts of this nature should, for adequate protection, be written broadly in favor of the leasee. The contract should specify: "This lease contract is automatically canceled and the leasee is relieved from further payments to the leasor if and when the deposits on the property became exhausted, or unprofitable for the leasee to remove".

Lease Was Breached

Modern higher courts consistently hold that a property owner may cancel a lease contract if the leasee breaches any one or more clauses in the lease contract.

For illustration, in *Drew Gravel Company v. Stell*, 20 S. W. (2d) 609, it was disclosed that a gravel company leased real property from which to excavate gravel. The lease contract contained a clause under which the gravel company agreed to pay a stipulated amount for excavated gravel and also to pay $50 rental each month that no gravel was removed, but that under no circumstances should the property remain idle for more than three consecutive months.

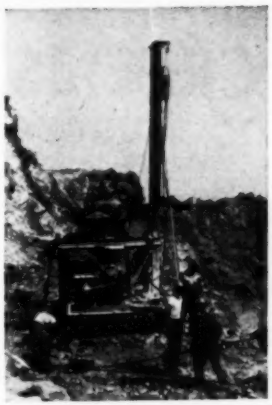
The gravel company failed to pay the rent promptly and also permitted the property to remain idle for a longer period than three months. The owner filed suit to cancel the lease.

The counsel for the gravel company argued that the lease should not be canceled because of the nonpayment of the $50 monthly rentals and failure to mine gravel, for the reason that no demand for the rent was made by the property owner. Moreover, an officer of the gravel company had offered to pay the rent to the property owner the day the suit was filed. However, it is interesting to observe that the higher court held the lease forfeited, saying:

"It is admitted that for five consecutive months that plant had not been operated, nor had the rent been paid. . . . The right to cancel the lease existed unless it had been waived. . . . It is true that the lessee (gravel company) offered to pay the past due rents; but, if the right to cancel had then accrued, this right was not destroyed by the belated tender."

"As Is" Contract

A reader asked this question: "We purchased a used steam shovel under a contract which contained a clause that we were purchasing the shovel 'as is, no recourse'. We find that the shovel is not worth one-third the price we paid for it because it is badly out of repair and so much money must be spent to make it operate. At the time we signed the con-



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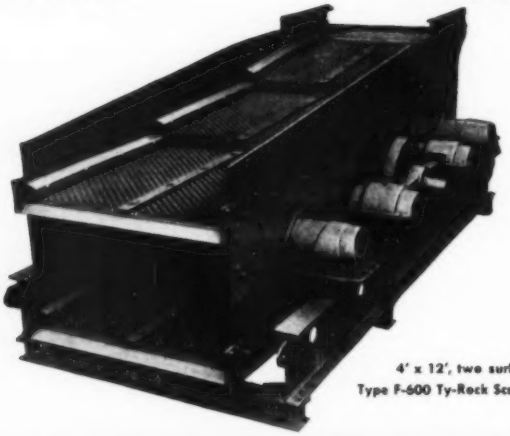

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tract, the seller verbally guaranteed that the shovel was in good condition. Can we cancel the contract and get our money back?"

According to a late higher court decision, the answer is no.

In *Garofalo Company v. St. Marys, Packing Company*, 90 N. E. (2d) 292, the court said: "The words 'as is, no recourse' when considered together, clearly state the intent of the parties. . . . Words are to be understood in their ordinary significance. 'No recourse' means no access to, no return, no coming back upon, no assumption of any liability whatsoever, no looking to the party using the term for any reimbursement in case of loss, or damage, or failure of consideration in that which was the cause, the motive, the object, of the undertaking or contract."

Also, see *Illinois Company v. National Sand and Gravel Company*, 136 So. 652. This court said that an invoice specifying the sale of a second-hand locomotive "as is" meant the condition when sold. In other words, a written sale contract containing an "as is" clause means that the buyer does not expect any guarantee, regardless of verbal promises made by the seller.

Bidder Fails to Comply

The higher courts consistently hold that a contractor has no standing whatever, as a bidder, if he fails to comply with specifications when submitting a bid.

For example, in *Travis v. Highlands*, 55 Atl. (2d) 109, the litigation involved the award by a municipality of a contract to Layne Corporation on a bid of $69,200. The testimony showed that one Travis submitted a bid which was $7,853 lower than the Layne bid. Nevertheless, the contract was awarded to the higher bidder.

Travis filed suit to invalidate the contract awarded to the Layne Corporation on the grounds that the municipal governing body was guilty of bad faith in the award of the contract to this corporation.

During the trial the testimony showed that Travis did not fully comply with the specifications when submitting his bid. Hence, the higher court refused to hold in favor of Travis but held that the contract was lawfully awarded to Layne Corporation. In this respect the court said: "In the absence of a clear showing of bad faith, the court will not substitute its judgment on an administrative matter concerning the affairs of municipal government clearly within its province."

General Contractor vs Sub-Contractor

Recently a higher court was asked to decide this important question: "If a general contractor employs a subcontractor, can the property owner hold both the general contractor and the subcontractor liable in damages for negligence in installing the work?" The answer is: only the sub-contractor is liable.

For example, in *Hunter v. Quality Homes*, 68 Atl. (2) 20, it was shown a sub-contractor took a contract from a general contractor. Soon afterward there

was a violent explosion which caused considerable damage to the building. The property owner sued both the general contractor and the sub-contractor for damages.

The higher court refused to hold the general contractor liable but assumed a different attitude toward the sub-contractor, holding that a sub-contractor always is liable for injuries or damages resulting from negligence of his employees.

Cannot Disturb Neighbors

Recently a higher court held that any nuisance can be stopped by owners of nearby private residences. This court clearly indicated the kind of "nuisances" that will be prohibited.

For illustration, in *McClung v. Louisville*, 51 So. (2d) 371, it was shown a company was sued by owners of homes in a residential area. These home owners testified that the company unloaded metal sand cars by beating the sides with heavy tools, creating loud noises with resulting disturbance to the home-owners in a nearby high-class residential area.

The higher court held the company responsible and said: "We think the evidence justifies an injunction against the C. G. Kershaw Contracting Company restraining it from so operating and conducting its business of unloading sand and gravel and other material from cars into bins by beating and pounding on the cars so as to make loud and disturbing noises, obnoxious to the residents of that area."

Authority of President

Recently a reader wrote an interesting letter in part as follows: "Can the president of a corporation bind the corporation with respect to business dealings, discounting of notes, etc., with a finance company or bank?" According to a late higher court decision the answer is no, generally.

Contrary to the opinion of the majority of persons, the president of a corporation may not legally bind the corporation, except in accordance with the provisions of the by-laws or by authority of its directors, or custom.

For instance, in *First National Bank v. Cement Products Company*, 227 N. W. 908, it was disclosed that the Cement Products Company accepted from a purchaser of materials notes aggregating $45,000. The company sold these notes to a bank. At this time the president of the cement company agreed in writing with the bank that the cement company would remain liable on promissory notes purchased by the bank, and make good any unpaid notes.

Subsequently litigation developed over whether the cement company was liable to the bank for the value of the notes on which the bank failed to collect.

During the trial testimony was given that the articles of incorporation of the Cement Products Company provide that the business shall be managed by a board of directors. Neither the articles nor the by-laws authorized the president to enter into or execute contracts which guaranteed the notes to be collectable by the bank. Therefore, since the corporation's directors had *not* authorized

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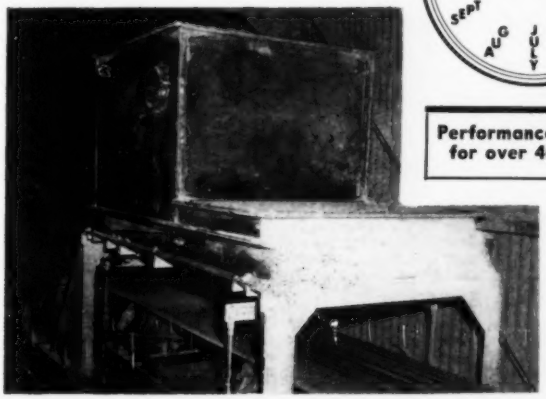

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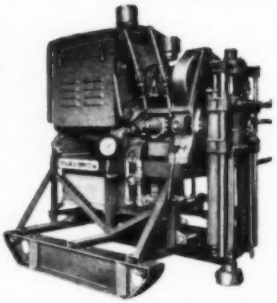

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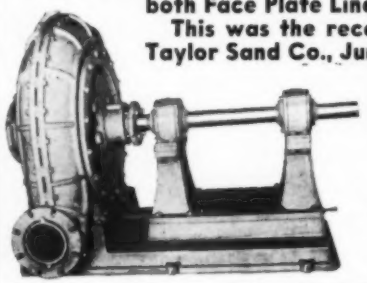

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the president to obligate the corporation in this manner, the court held the corporation not bound by the president's agreement, and said:

"It is well settled that the office of president of a corporation in itself confers no powers upon him to bind it by contract. His power must be determined by the organic law of the corporation or by delegation of authority by its managing officers or be implied from the habit or custom of transacting the business of the corporation. . . ."

Cannot Block Sidewalks

Another reader asked this question: "Is a contractor relieved from liability for injuries to pedestrians on sidewalks if the contractor has a permit to block the sidewalk?" A leading higher court answered this question in the negative.

This is so because the primary purpose of the city streets is their use by the public. Hence, any person may be liable for the obstruction of a sidewalk and, although municipal officials issue a permit to block the sidewalk, this fact does *not* avoid the liability of the contractor who obstructs the sidewalk.

In *O'Neill v. Jervis*, 171 N. E. 694, it was shown that municipal officials issued a permit to a contractor to pile materials on the sidewalk. A pedestrian who was forced to walk in the street on account of this material was struck by an automobile. He sued for damages.

The lower court held the injured person not entitled to damages, but the higher court reversed the decision, saying: "There was no necessity for storing material upon the sidewalk to the exclusion of all use by pedestrians *for any great length of time.*"

Rights and Obligations of Surety

A few days ago two different contractors asked the same questions, as follows: "Can a defaulting contractor's surety elect to either pay damages for the default or complete the contractor's contract? Is a surety entitled to a lien against real property to secure payment for work already performed by the defaulting contractor? Can a material man compel a defaulting contractor's surety to pay for materials purchased by the contractor?" According to a late higher court decision the answer to each question is yes.

All efficient bonds contain clauses that the surety may on default by the contractor either complete the work undertaken by the contractor or voluntarily pay the damages resulting from the contractor's default. Moreover, the higher courts hold that a surety who assumes the defaulted contract is entitled to the full benefits of the contract beginning on the date the contractor defaulted. Also, the surety may collect any sum that may be due the contractor, and he also becomes subject to all the contractor's liabilities. Therefore, a surety is entitled to a lien for its work or materials if the contractor was entitled to a lien. And the surety is liable for payment to all material men for the material both it and the contractor used in completing the construction work on which the contractor defaulted.

For instance, in *Pute Company v. Fidelity Company*, 29 S. W. (2d) 1004,

it was shown a contractor and property owner entered into a written contract.

The terms of the contract obligated the contractor to erect a one-story Spanish type of dwelling, in accordance with the plans and specifications attached, "in good workmanship manner and to the best of his ability, and to furnish all labor and material to build the dwelling". The owner agreed to pay to the contractor a specified sum in full payment for the work, labor, and material used and expended in the construction of the building. Before the building was completed, the contractor abandoned the work and the contractor's surety elected to complete the contract. In holding the surety bound to pay the material men who furnished material to the contractor and also to the surety, the court said:

"When the owner notified the defendant (surety) that the contractor had made default, the record shows that it elected to complete the contract, thereby becoming entitled to all the benefits of the contract and assuming all its responsibilities. When the defendant (surety) reserved the right to make this election, and after he had exercised it, under the very conditions which it had previously prescribed . . . the defendant (surety) became entitled to the benefits of the contract, and necessarily assumed its burdens."

Contract Broadly Construed

Recently a reader wrote as follows: "We made a lease contract with a property owner to pay a stated price per motor truckload for all sand and gravel taken from the premises. Now the question arises whether we can pay for sand and gravel when measured in railroad cars."

Frequently when deciding litigations involving contracts, the courts render decisions based upon common sense, instead of the actual wording of a contract.

For instance, in *Hewlett v. Goodwin Sand and Gravel Corporation*, 171 N. E. 758, it was disclosed that a gravel company entered into a lease contract with a property owner. The contract stated that the gravel company would remove not less than 225,000 yards of sand, gravel, and grit per year during the term of the contract, or pay a stipulated price for such quantity at minimum rental. The lease further provided that a statement of the quantity of sand and gravel shall be rendered by the company at the end of each month to the owner "and all sand and gravel shall be measured in the vessels on which it is loaded and at the dock where the same is loaded".

Later litigation developed when the gravel company decided that instead of loading the material on vessels, it would make shipments by railroad. The property owner contended that the gravel company was obligated by the lease to make payments according to measurements in vessels. However, the court refused to render its decision in favor of the property owner, saying:

"There can be no doubt that the parties expected that the material would be removed from the premises by vessels, and in view of that expectation they

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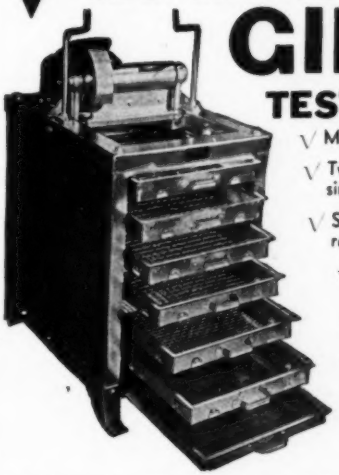

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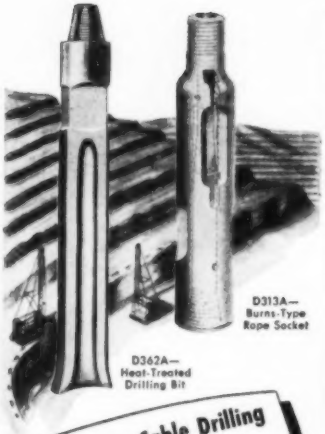

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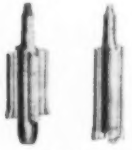

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provided for measurement at the dock or on the vessels. . . . Measurement on vessels is merely part of the machinery for fixing the amount due under the lease. It is not an essential part of the lease and does not justify reading into the contract, by implication, a covenant to build docks and load vessels on the premises merely to facilitate the measurement of the material removed."

A $10,000,000 asbestos plant, which will be capable of producing an estimated 5,000 tons a day, will be set up at Coleraine, near Thetford Mines, Quebec, Canada, according to Premier Duplessis. Work on the plant will start next spring and will take from two to three years to complete, he said. Premier Duplessis stated that the plant will employ between 300 and 400 persons, and its annual payroll will be about $1,500,000.

Announcement was made recently of the opening of R. L. Lucas Sand Company, formerly Arroyo Sand Company, at Harlington, Tex. The plant is located on the Rangerville Road.

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Detroit and Lakeland	167
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Wyandotte, Mich.	34	38

Subject to ExParte 175 increase.

Bulletin G-4993 (Shipper)—Proposed to establish on sand, burned or refuse molding, in open-top equipment, carload, minimum weight 90 percent of marked capacity of car, from Glassport, Pa., to Wylie, Bessemer, and Homestead, Pa., $1.16 net ton; Monessen, Pa., $1.32 per net ton. Subject to Ex Parte 175 increase.

Bulletin G-5019 (Carrier)—Proposed to establish on sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, molding or silica) and gravel, in open-top cars, minimum weight 90 percent of the marked capacity of car to Graham, W. Va., from Rittenours and Richmondale, O., $2.07 per net ton. Subject to Ex Parte 175 increase.

Bulletin G-5054 (Increase and reduction)—To cancel rate of $3.59 per net ton, subject to all increases, on limestone, unburned, ground, or pulverized, carload minimum weight 30 tons from Kerns, Va., to Marietta, O., account obsolete.

To amend rate on above mentioned commodity to be $2.59 per net ton, from Kimballton and Ripplemead, Va., to Mari-

etta, O., in lieu of $3.59 per net ton.

ILLINOIS FREIGHT ASSOCIATION

Docket IRC 511-1097—Proposed to establish on sand (except blast, core, filter, fire or furnace, foundry, glass, grinding, ground, loam, molding, molding-bonded (material or otherwise), polishing, pulverized or silica) and gravel, in open-top cars, Pinkstaff, Ill., to Litchfield, Ill., minimum weight 90 per cent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply. Proposed: $1.53 per net ton.

NORTH PACIFIC COAST FREIGHT BUREAU DOCKETS

Docket NC-2289 (S)—Proposed to establish on limerock, carload, Limestone Junction, Wash., to Bellingham, Wash., 70 cents per net ton, not subject to Ex-175; or 63 cents net ton, subject to X-175.

Docket NC-2292—Request for rates on sand and gravel, carload, from Aberdeen, Wash., to Copalis, Pacific Beach, and Elma, Wash., 4¼ cents per hundredweight; Moclips and Rochester, Wash., 5 cents per hundredweight; and Shelton, Wash., 5½ cents per hundredweight, minimum 50 tons.

Docket NC-1949—Supplement No. 1 has been reopened, and it is proposed to establish on limestone, crushed, ground or powdered in open cars, carload, Cooper, Wash., to Drain, Ore., 20 cents per hundredweight, and Roseburg, Ore., 21 cents, minimum 50 tons.

Docket NC-2308 (S)—Proposed to established on lime, car load, from Evans, Wash., to Lewiston, Idaho, 23 cents per hundredweight, minimum 40 tons.

PACIFIC SOUTHCOAST FREIGHT BUREAU PROPOSALS

Docket (X) 2276 (S)—Proposed to establish on rock, phosphate, carload, Kemmerer, Wyo., Montpelier, Idaho, and other origins in item 8110 Pacific Southcoast Freight Bureau docket 260-B to Long Beach and Los Angeles Harbor, Calif., $5.38 per ton of 2,240 lb., applicable only on export traffic, minimum 40 tons.

Docket (X) 2277 (S)—Proposed to establish on rock, lime, in open cars, rate of 12 cents per hundredweight from Auburn to Decoto, Calif., minimum 50 tons.

WEEKLY DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION PROPOSALS

Docket A-8718 (c)—Lime, carload, described in item 200, Southern Freight tariff bureau tariff 709-F, Knoxville, Tenn., and group points to the following points:

	Rates in Cents per Ton of 2000 lb. 30,000 lb.	50,000 lb.
Bound Brook, N. J.	902	747
Reading, Pa.	881	732
Cumberland Mills, Me.	941	887

Above rates not subject to X 162-6-8.

Docket A-8719 (c)—Crushed stone, in closed cars, proposed to establish rate of 325 cents per net ton, carload 40 ton minimum, Tate and Whitestone, Ga., to E. St. Louis, Ill. Applicable only to Western Trunk Line territory.

Docket A-8797 (a)—Proposed to establish rate of 480 cents per net ton on lime, carload, 25 tons, Mosher and St. Genevieve, Mo., to West Point, Ky., and points taking same rates as to Louisville, Ky. Not subject to X-162-6-8 increases.

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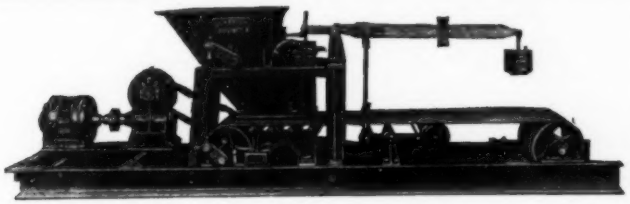
WEIGHING • BLENDING • RECORDING
FEEDING • MIXING • PROPORTIONING



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Korb-Pettit Wire Screens are not only first quality in material and workmanship but are engineered for the job involved. Available in High Carbon Spring Steel and Oil Tempered Spring Steel for extreme abrasion resistance. Designed for all types of vibrators and rotary equipment.

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Must have experience in small-quarry operating methods in non-metallic mineral field.

PLANT SUPERINTENDENT

Must have experience in operation of crushing, grinding and size-separation equipment in chemical or non-metallic mineral industries.

Completely new operation by long-established multi-plant organization. Salaries open. Location: Lake Champlain area, New York.

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STANDARD Buckets are made in standardized designs, or to your individual requirements. Heavy duty construction, either welded or riveted. Prompt service on all orders. Write for prices giving quantity, length, depth, projection, gauge of steel and type of bucket wanted.

STANDARD METAL MFG. CO.
Malinta, Ohio

Docket A-6355—Proposed to establish on limestone, 60,000 lb., Gibsonburg, O., and Ohio group 1 points to the following cities:

	Open Cars	Closed Cars
New Market, Ky.	334	384
Pine Grove and Childersburg, Ky.	322	372

Not subject to 162-6-8 increases.

SOUTHWESTERN FREIGHT BUREAU DOCKET

Docket 58548—Proposed to publish a rate of $5.60 per net ton on rock, perlite, broken, crushed or ground, dried or not dried, not expanded, minimum weight marked capacity of car, but not less than 40 tons, from Socorro, N. M., to Des Moines, Ia.

Docket 58649 (2)—Proposed to establish rate of 480 cents per net ton on lime, carload, minimum weight 25 tons from Mosher and Ste. Genevieve, Mo., to West Point, Ky., and points taking same rates. Not subject to ExParte 162, 166 or 168 increases, to West Point, Ky., and points taking same rates.

FREIGHT TRAFFIC COMMITTEE
Trunk Line Territory Railroads

Docket TL-M-1757 (Carrier)—Proposed to establish on sand (except sand, molding, bonded, naturally or otherwise, and ground or pulverized), and gravel, in open-top equipment, without tarpaulin or other protective covering, minimum weight 90 percent of marked capacity of car, from Succasunna, N. J., to South Orange, N. J. 87 cents per net ton, subject to ExParte 175 increase.

WESTERN TRUNK LINE NEW APPLICATIONS

Docket E-41-1500 (S)—Proposed to establish on silica sand, carload, in closed cars, minimum weight 90 percent of marked capacity of car, except that when loaded to full visible capacity of car, actual weight will apply from Alexandria, S. D., to Denver, Colo., $5.84 in cents per ton of 2,000 lb., subject to X-175-A.

Docket E-41-1701 (S)—It is proposed to amend Item 2350-G, A. T. & S. F. tariff 5896-G by publishing rate of $5.60 per net ton on rock, perlite, broken, crushed or ground, dried or not dried, not expanded, carload minimum weight marked capacity of car but not less than 40 tons, from Socorro, N. M., to Des Moines, Ia.

Docket E-41-1504 (S)—Proposed to establish a rate of 500 cents per net ton on stone, crushed, in closed cars, carload minimum weight 90 percent of marked capacity of car, except that when weight of shipment loaded to full visible capacity is less than 90 percent of marked capacity of car, the actual weight will apply, but not less than 20 tons, from Waukesha, Wis., to Fargo, N. D., and Moorhead, Minn. Subject to X-175 only.

Docket E-41-1505 (S)—Proposed to establish on stone, crushed, in closed cars, carload minimum weight 90 percent of marked capacity of car except that when weight of shipment loaded to full visible capacity of car is less than 90 percent of marked capacity of car, actual weight will apply, but not less than 40,000 lb., from Sussex, Spur 105 and Waukesha, Wis., to Grand Forks, N. D., and East Grand Forks, Minn. Proposed, 573 cents per net ton, subject to X-175 only.

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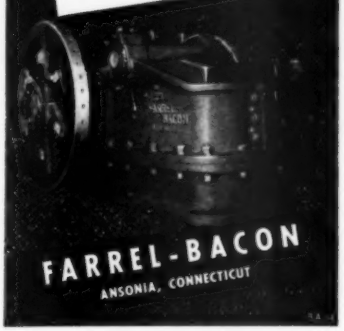
SIZES 60"x48" to 10"x7"

Optional design features include: (1) Meehanite frame, sectionalized when necessary; (2) removable water-cooled bearings; (3) improved design of swing-jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive. *Write for further details or engineering assistance.*



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NOPCO ERTRANE* C

meets all requirements of

ASTM SPECIFICATION C226-50T

Nopco* Chemical Company—forty years in the business of supplying industry chemicals for numerous applications, and today selling $20,000,000 worth of chemical products—now offers its new, scientifically developed air-entraining agent, NOPCO ERTRANE C.

This agent has been subjected to a series of rigid tests by the fully qualified laboratory of E. L. Conwell & Co., Philadelphia, and has met all eight requirements of Specification C226-50T.

This means that—

Nopco Ertrane C is a fully accredited air-entraining agent for use in the manufacture of air-entraining cement made in conformance with ASTM SPECIFICATION C175-50T—the specification reflecting the current policy of Committee C-1.

The results of exhaustive tests have proved conclusively that air-entraining portland cement employing Nopco Ertrane C assures concrete of good strength and excellent durability. And look at these added advantages:

EASY, ECONOMICAL HANDLING—It is only necessary to add Ertrane C to water and stir until dissolved. No control testing required. Thus considerable savings in time and labor are realized at the mill.

IMPROVED PLASTICITY—Ertrane C not only provides excellent durability and plasticity (through air formation) but imparts qualities that *increase workability and placeability.*

IMPROVED WATER REPELLENCY AND STORAGE LIFE—Owing to its composition, Ertrane C gives *more water repellency* than straight resin soaps —helps to prevent cement from caking in storage.

GOOD COST PERFORMANCE RATIO—On a cost/performance basis, Ertrane C is the *most economical* air-entraining agent on the market.

Ertrane C is immediately available, in any quantity, from Nopco's plants at Harrison, N. J., Chicago, and Cedartown, Ga.

Profit by filling out the attached coupon and getting full information about Ertrane C—the new air-entraining agent that actually surpasses the requirements of ASTM Specification C226-50T by impressive margins in virtually every instance.

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Gentlemen:

I am interested in learning more about Ertrane C. Will you kindly—

- ☐ send me further details—including full report of tests made by the E. L. Conwell Co. laboratories.
- ☐ have your representative call.

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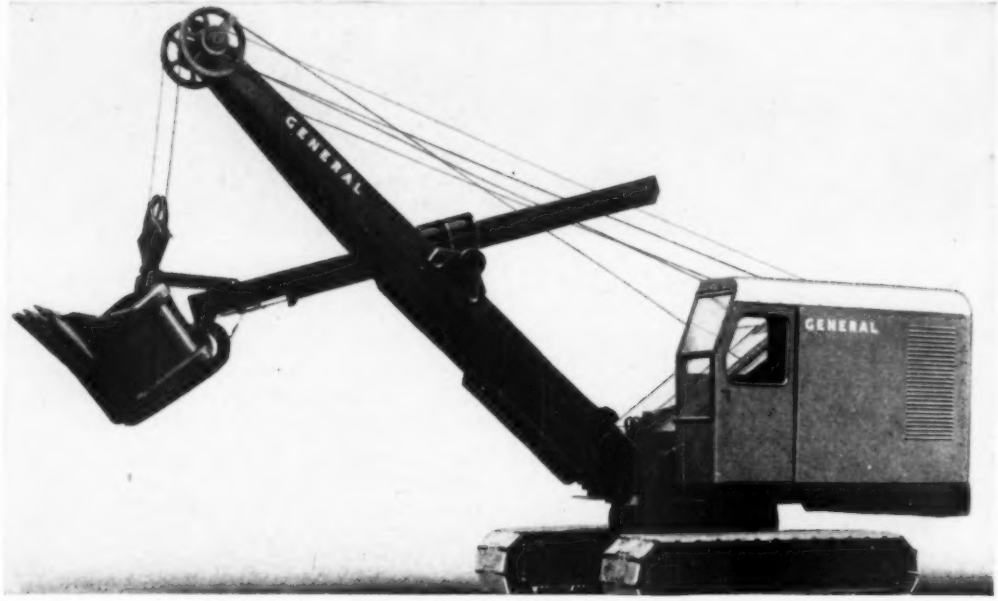
GENERAL



Extra work-capacity of new ¾-yard shovel SAVES YOU MONEY

GENERAL's new ¾-yd. Shovel Model 320 is specially engineered to save you money through extra work-capacity and longer service life. Every feature is built to reduce maintenance, cut down-time, and provide outstanding performance. Fewer points require adjustment or lubrication. Hook rollers, drums, and shafts are all mounted on anti-friction bearings sealed for life of machine. Oilless bushings are used for all lever connections. Locknuts guarantee safe, permanent fastenings. Simplified design assures permanent alignment of shafts and makes it easy to remove any shaft without disturbing adjacent assemblies. Conversion from Shovel to Dragline, Crane, Clamshell, or Hoe can be made quickly in the field without changing any major assemblies. Independent Travel, with two speeds forward and two reverse, is optional. Control is manual, with disc-type clutches (air control is available in ¾-yd. GENERAL Model 310). Choice of Diesel, gasoline, or electric power. Write today.

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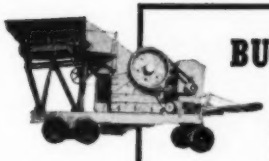

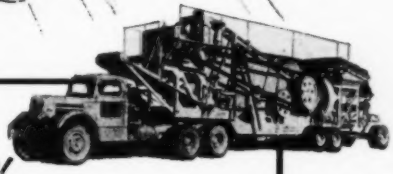

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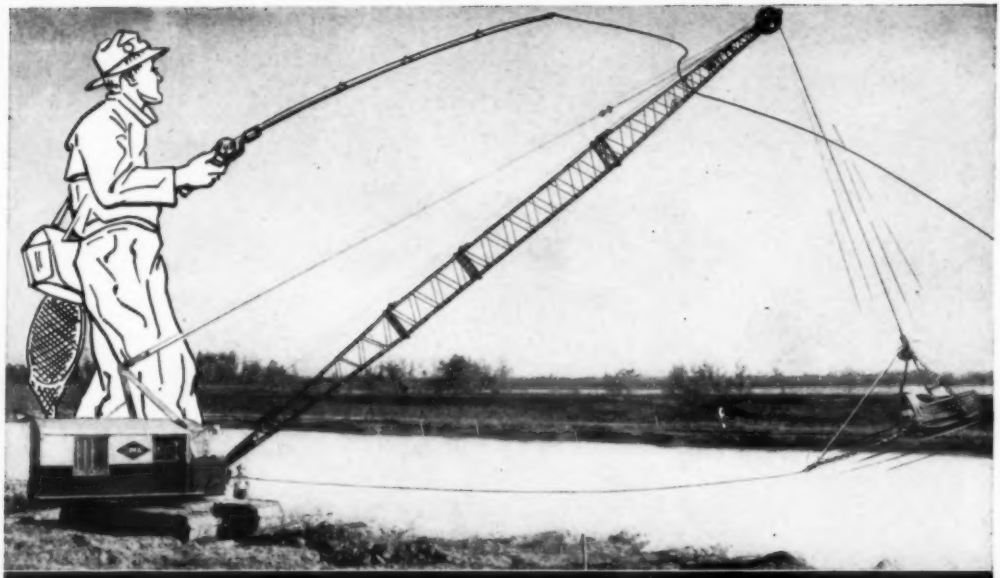
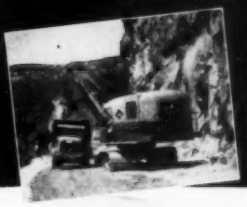


LIMA DRAGLINES use *The Fisherman's Secret* FOR A GOOD CATCH



When you're fishing, and want to drop the bait in the far pool where the big ones are waiting, your reel's got to be *friction-free* to let that line flow out, smooth as cream from a jug. And, after the strike, come in the same way.

When you're after record yardage, a smooth flowing line is just as vital . . . so we took a tip from the fisherman, and made our reels friction-free. You can 'cast' the dragline bucket further, increase your radius of efficient operation from each location. You can bring in bigger catches, because more power is going into the work lines and less into *friction drag on the machinery*. And there's further big benefits from reduced maintenance . . . less frequent lubrication, and smoother operation, because misalignment from bearing wear, that affects clutch alignment and functioning, is eliminated.

Lima pioneered the use of anti-friction bearings at all important bearing points on draglines, shovels, and cranes. They've kept on pioneering with other improvements that put Lima equipment in the top rank of profitable performers. If you want proof of this—just ask the Lima user. If you want details on how to put Lima equipment on your *pay-off* roll . . . just get in touch with us.

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LIMA-HAMILTON DIVISION
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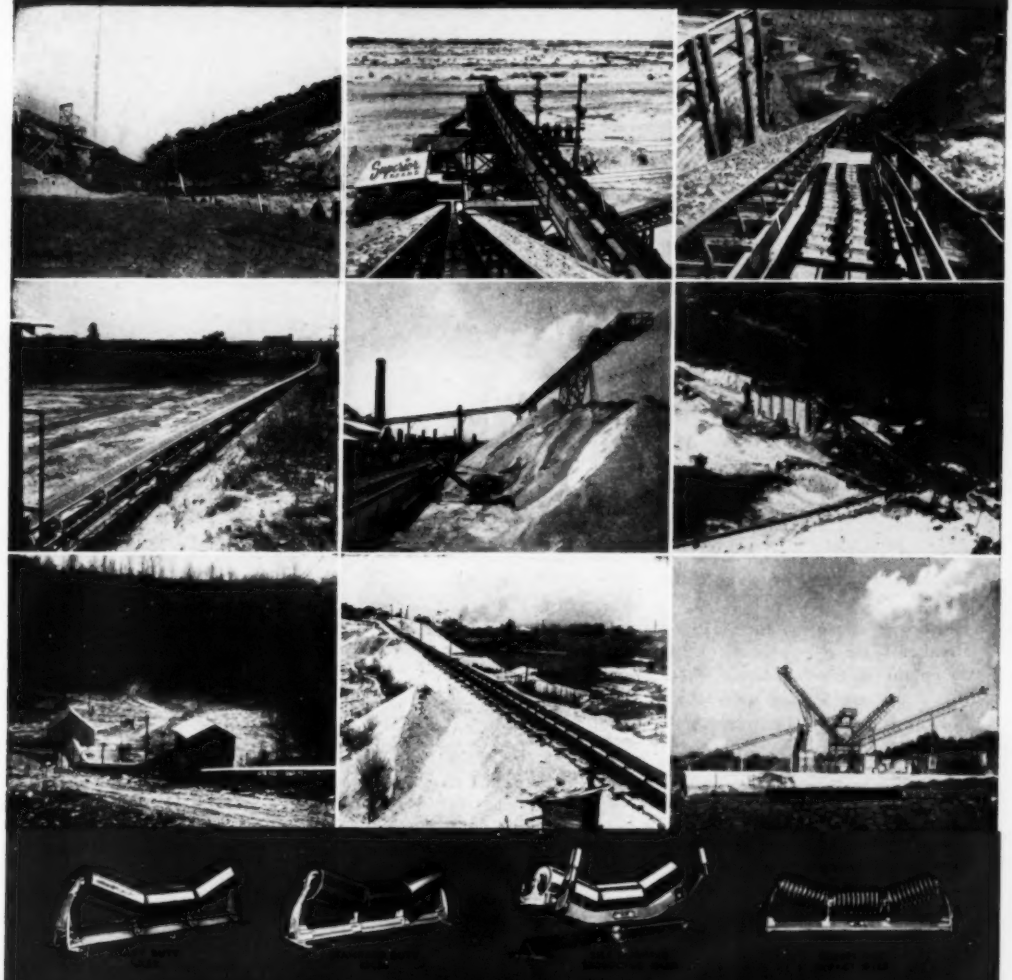

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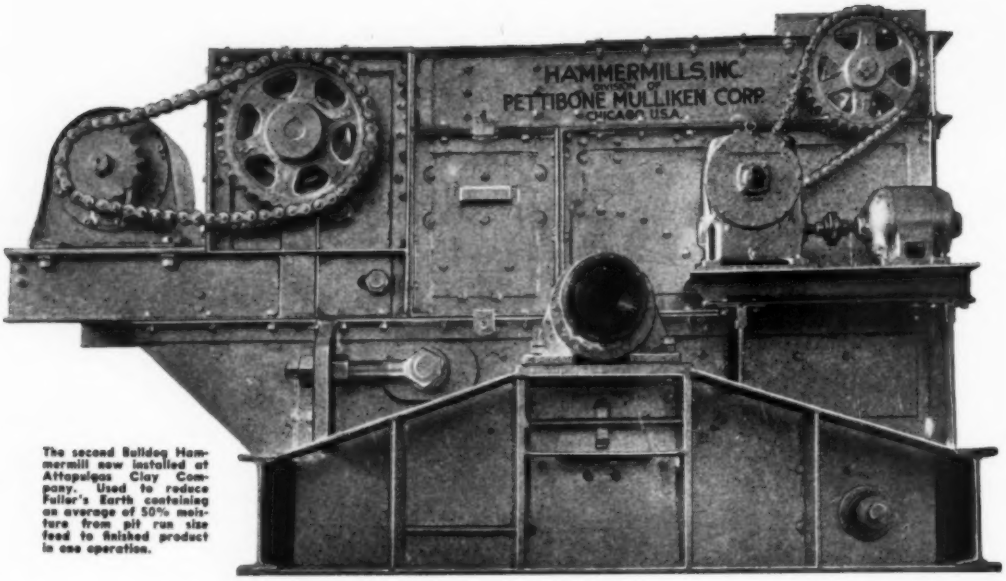

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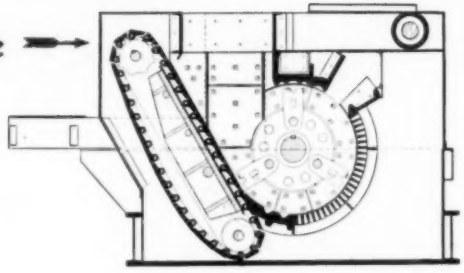
BULLDOG HAMMERMILL

with Moving Breaker Plate



For wet, sticky material reduction . . . for those tough, heavy-duty crushing jobs.

Illustrated above is the last word in Moving Breaker Plate Hammermill design. It is built by an engineering organization whose experience far surpasses any organization that might furnish Moving Breaker Plate crushing equipment.

Design Improvements have increased reduction efficiencies and lowered H.P. requirements. You can see this equipment in operation at any time. Also Hammermills will gladly survey your reduction requirements and recommend the proper equipment without cost or obligation. Just write or call.

Bulldog Hammermills are built in capacities up to 1000 tons per hour for every purpose: for primary, secondary, fine reduction of materials such as limestone, shale, Fuller's Earth, phosphate muck, phosphate mud balls, iron ore, oyster and clam shells, any reducible material.

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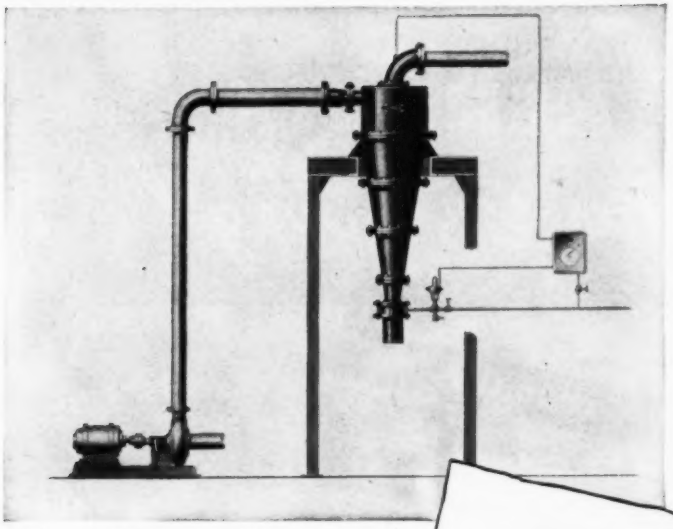

how good is a DorrClone* on desliming operations?

Results of independently run tests** on a 24" diameter DorrClone at a typical Florida phosphate rock washer show high recovery of wanted fraction—high elimination of slimes — remarkably constant discharge density.

PROBLEM

To deslime minus 14 mesh washer debris for maximum recovery of plus 200 mesh material prior to concentration.

EQUIPMENT TESTED

24" diameter DorrClone equipped with Dorrco Vactrol* feature for automatic density control.

TESTING PROCEDURE

Cumulative samples of DorrClone feed, overflow and underflow taken on a half-hourly basis over a five-day period.

Summary of Cumulative Results

Cum. Sample Number	Sampling Period in Hrs.	Feed % Solids	Underflow % Solids	Overflow % Solids	Underflow +200 Rec.	Overflow −200 Elim.	Feed T.P.H.
#1	7.0	14.1	70.2	6.5	97.14	89.27	32.8
#2	3.5	22.1	69.8	5.8	93.88	97.07	36.9
#3	6.0	13.3	67.2	4.4	97.23	88.07	25.5
#4	5.5	28.7	76.6	5.1	97.55	93.24	41.4
#5	6.5	14.2	72.8	5.5	96.83	90.64	33.8

*DorrClone and Vactrol are trademarks of The Dorr Company.

**Name and location upon request.

Regardless of material processed, the DorrClone can handle your desliming problem. Write to The Dorr Company, Engineers, Barry Place, Stamford, Conn., or in Canada to The Dorr Company, Engineers, 80 Richmond Street West, Toronto 1.

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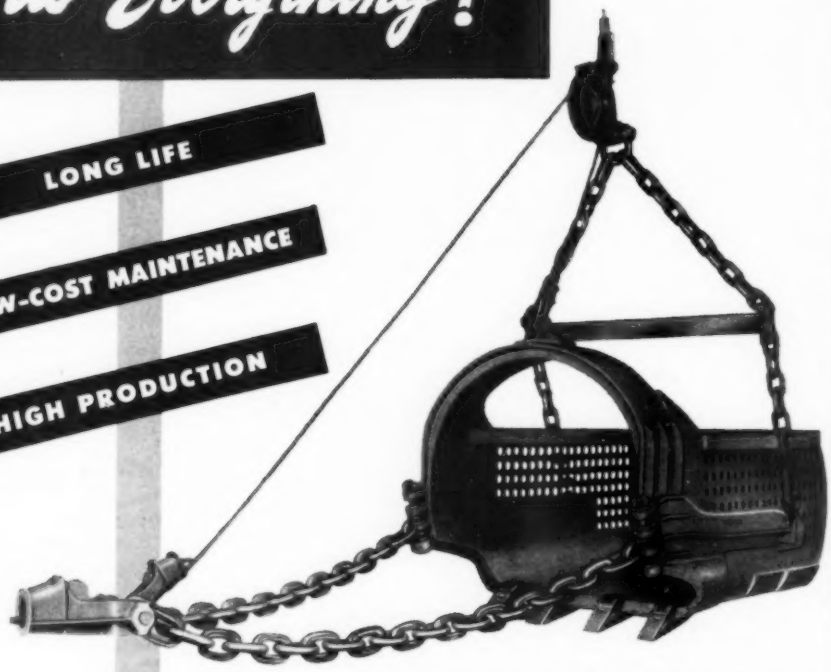

3/8 to 40
CUBIC YARDS

A TYPE & SIZE
FOR EVERY
DIGGING PURPOSE

Their proven ability TO STAY ON THE JOB has made Hendrix Dragline Buckets a favorite with owners and operators all over the country. This is the result of expert engineering, superior workmanship, and higher quality materials that go into every Hendrix Bucket. Gruelling performance tests in the field prove Hendrix Buckets can stay on the job longer . . . move more dirt quicker . . . produce more profits than any other bucket, type for type, size for size!

HENDRIX
Lightweight
DRAGLINE BUCKETS

Hendrix Buckets may be special ordered without perforations

HENDRIX MANUFACTURING CO., INC.

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We design and manufacture "*every type and size*" of Speed Reducer and Gear. . . . This fact is important: (1) It assures the purchaser of our "unbiased" recommendations; (2) Permits ordering from "one source" of supply; (3) Enables the purchaser to place the *responsibility* for the operation of their Speed Reducers and Gears upon the shoulders of "one manufacturer".

Today, "Phillie Gear" has one of the largest and most modernly equipped gear plants in the country. Your inquiries are invited for information on any type of Gear or Gear Driven Product, which, of course, includes the widely used "*LimiTorque*" *Valve Control.*

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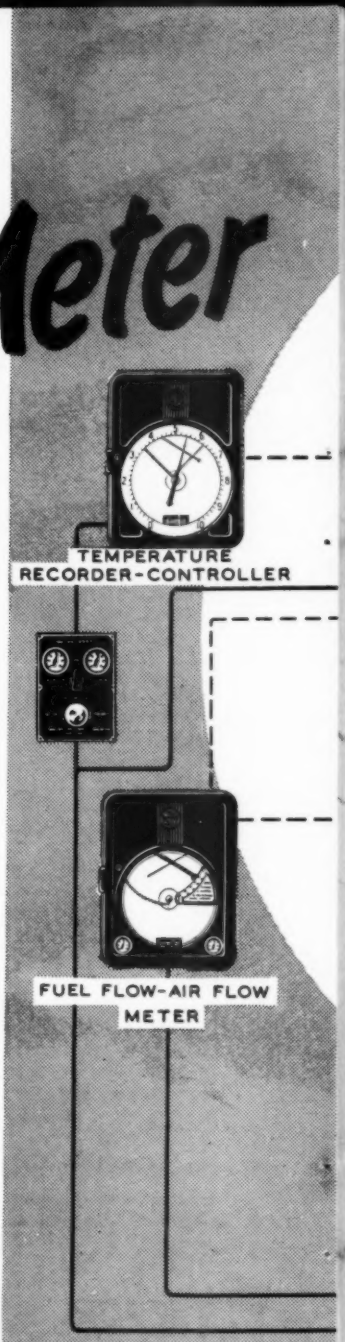
Industrial Gears and Speed Reducers
LimiTorque Valve Controls

Now! "Self-Serve" Operation - Bailey Meter



Your "Self-Serve" Bailey controlled rotary kiln literally thinks for itself and reacts quickly and correctly to any changes in operating conditions. You get:

1. **Economical Operation**—*Gives maximum production from every unit of fuel you burn* because Bailey Combustion Control closely guards Fuel-Air Ratio, Hood Draft, Fuel Feed, Clinker Cooling and Temperature of Air for Combustion.

2. **Uniform High Quality of Product**—Accurate measurement and control of Kiln Speed, Burning Zone Temperature, Combustibles Content and Oxygen Content . . . *for a high grade product, consistently.*

3. **Minimum Maintenance**—Uniform excess air conditions and constant temperatures *prolong the life of your kiln.* Costly refractory repairs and wear and tear on auxiliary equipment are reduced to a minimum.

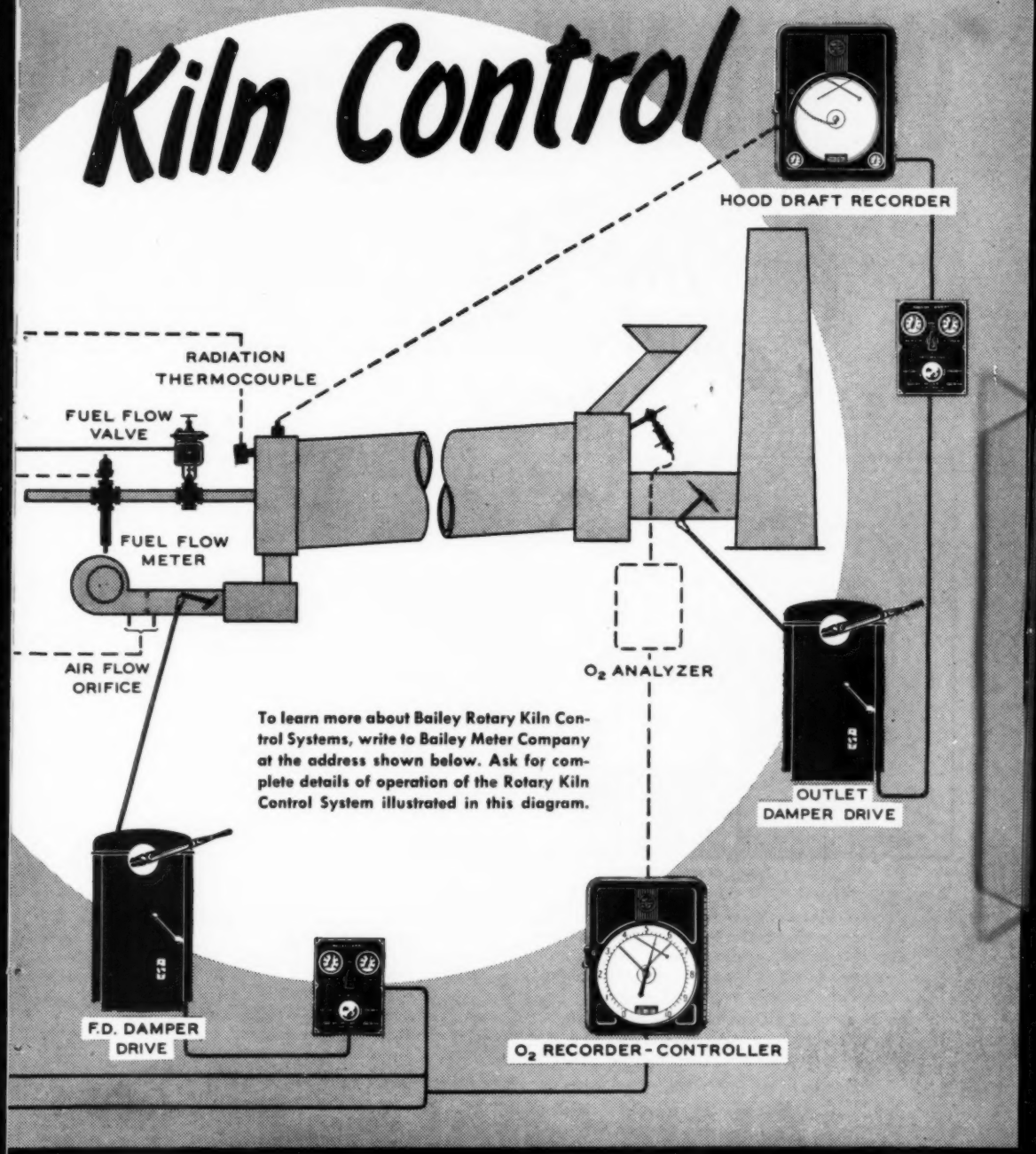
The accompanying diagram shows one way in which Bailey instruments and controls can give you a "Self-Serve" Kiln. Other arrangements to suit the requirements of any rotary kiln are available.

Bailey Meter Company maintains a staff of engineers who are experts in the control of rotary kilns. Let one of these men help plan a control system to give you a "Self-Serve" rotary kiln.

P-23

Bailey Meter Company

Kiln Control



To learn more about Bailey Rotary Kiln Control Systems, write to Bailey Meter Company at the address shown below. Ask for complete details of operation of the Rotary Kiln Control System illustrated in this diagram.

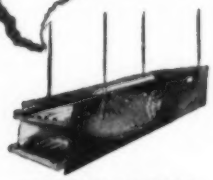
Meters and Control Systems for Process Plants

1051 IVANHOE ROAD • CLEVELAND 10, OHIO

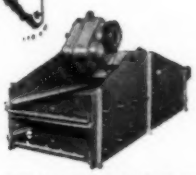
Bailey Meter Company Limited · Montreal

Want Help WITH SCREENING?

There's an A-C Man Near You!



RIPL-FLO SCREEN
A high capacity inclined vibrating screen with two-bearing mechanism. Low weight, maintenance, power requirement.



LOW-HEAD SCREEN
A horizontal screen for wet or dry screening, rinsing or dewatering. Straightline motion. Saves headroom, space.

STYLE "C" SCREEN
Extra heavy duty screen particularly adapted for scalping. Handles pieces up to 3 by 4 ft, weighing 3,000 pounds.

AERO-VIBE SCREEN
A sturdy, low cost vibrating screen for lump or granular materials. Makes separations 1½ in. square to 28 mesh.

UTAH ELECTRIC SCREEN
Handles fine, granular materials from 10 to 48 mesh (dry) or 65 mesh (wet). Non-blinding device minimizes blinding.

ALLIS-CHALMERS district offices offer you the services of experienced vibrating screen engineers. These men are specialists who have the training and experience to help you get top screening performance and lowest screening costs for your job.

These experts will come into your plant, look over your present equipment, and suggest how your screening can be made a more profitable operation. Their recommendations are unbiased because Allis-Chalmers builds *all* types of vibrating screens . . . for *any* screening application. All Allis-Chalmers screens can be obtained complete with motor, drive and control.

Feel free to call on Allis-Chalmers for real help in solving screening problems. You'll be getting the finest engineering and experience available anywhere. Allis-Chalmers, Milwaukee 1, Wisconsin. A-3541

Pulverator, Low-Head, Ripl-Flo, Aero-Vibe and Utah are Allis-Chalmers trademarks.

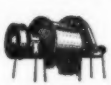
ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Pulverators

Vibrating Screens

Jaw Crushers



Grinding Mills

Gyratory Crushers

Kilns, Coolers, Dryers

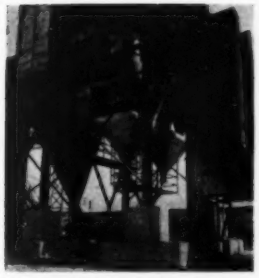
This 'dust' man is worth his weight in gold–to you

He can help you to new profit possibilities in the recovery of valuable escaping dust

There are still many industrial men who have yet to sit across the desk from an industrial dust engineer–a man who may be actually worth his weight in gold to you.

If you are one of these men, you have a revealing half-hour in store–a half-hour that can mean new profits…improved product and/or process…top over-all efficiency.

The reason? Buell's staff of industrial 'dust' men draw on more than 200 man-years of experience in the design and construction of high-efficiency, trouble-free Dust Recovery Systems. You will learn of the success of hundreds of Buell Installations. You will learn how one can be designed for you.



Buell van Tongeren Cyclones with the exclusive "Shave-off" provide high efficiency in the collection of kiln dust.

For full information about Buell Dust Recovery and Dust Collection Systems, write today. Ask for the new illustrated Buell 'Dust Recovery' bulletin. It can be a highly profitable move. Buell Engineering Company, Dept. 18-A, 70 Pine Street, New York 5, N. Y.

ELECTRIC CYCLONIC · buell

ENGINEERED EFFICIENCY IN DUST RECOVERY

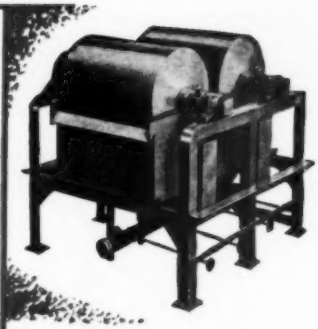
HIGH EFFICIENCY CYCLONES • ELECTRIC PRECIPITATORS
TYPE 'LN' COLLECTORS • LOW DRAFT LOSS COLLECTORS
SPECIAL PURPOSE COLLECTORS • DUST HOPPER VALVES

AT YOUR SERVICE
A BROAD LINE... WIDE EXPERIENCE

BIN VALVES
BUCKET ELEVATORS
CAR PULLERS
CHAINS
CONVEYORS
COOLERS
CRUSHERS
FEEDERS
PULVERIZERS
SCREENS
SEPARATORS
TRANSMISSION MACHINERY

MV
MECHANICAL VIBRATING CONVEYOR
(Patent Pending)

Operates at positive resonance, resulting in attractive power savings. Flexibility of design provides ruggedness required for any job and permits use of open or enclosed pan or tubular conveying decks. Floor or suspension mounting without loss of capacity. Bulletin No. 826.



JEFFREY-STEFFENSEN MAGNETIC SEPARATOR
(Patented)

Type shown is 3040 two-drum. Wet process types for effective separation of magnetic iron ore concentrates. A high and clean recovery.

MECHANICAL EFFICIENCY

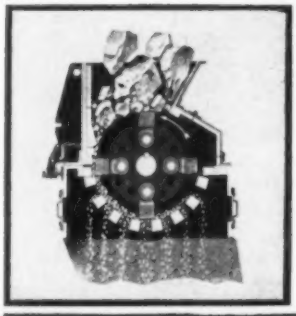
MIRACLE HAMMER CRUSHER
(Patented)

Heavy duty type for reduction of large pieces in single operation. Can do the work ordinarily done by two or more other types of crusher. Send for Catalog No. 837.

LOW COST OPERATION

GRIZZLY FEEDER

Provides a vibrating feeder and non-clogging grizzly in a single unit. Extremely flexible—handles large fluctuations in tonnage and feed size without mechanical adjustment. Catalog No. 830.



BELT CONVEYORS

Illustrated is a standard belt conveyor with specially designed Tripper serving a South African gold mine. Jeffrey offers a wide range of both chain and belt type conveyors. They are being used on many outstanding handling projects. Write for information.

• • •

Jeffrey Material Handling and Processing equipment covers all industries . . . a broad line and a wealth of experience to help you do your particular job better—faster. We will be happy to work with you, constructively. May we hear from you?

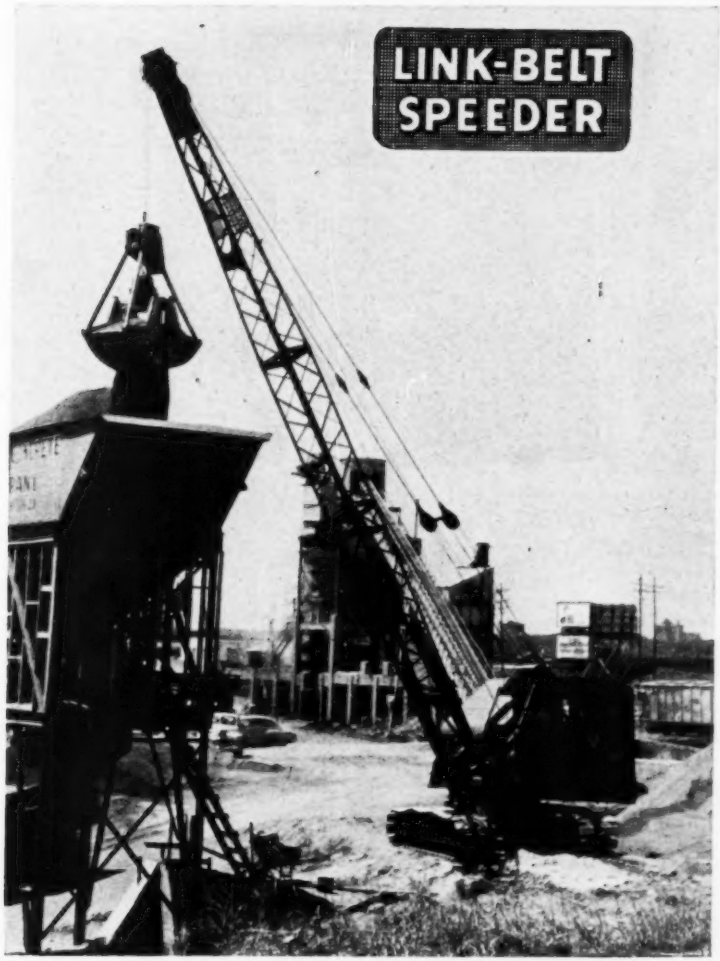
THE JEFFREY MANUFACTURING COMPANY

ESTABLISHED 1877

Complete Line of Material Handling, Processing and Mining Equipment

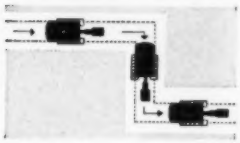
Lift or dig a bigger profit chunk

with LINK-BELT SPEEDER's super ¾ yard shovel-crane



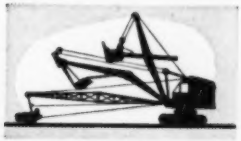
Dallas Concrete Co. uses this Link-Belt Speeder LS-85 for continuous loading of sand, rock and gravel. Husky LS-85 has the stamina it takes to stay on the job for more production.

Here are LINK-BELT SPEEDER plus features that work for you

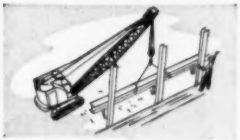


Turns on a Dime. Either track can drive or be locked independently. Digging lock controlled from cab.

All-Welded Lower—extra strength without extra weight. Resists impact and twist. Field service simple, fast.



Convertibility—designed for peak production as shovel, crane, dragline or trench hoe. Convert in field—quickly, easily.



Pinpoint Accuracy—eliminates lost motion. Instant response assures spotting heaviest loads—easily, precisely.

LINK-BELT SPEEDER
CORPORATION
12,070
Builders of the most complete line of shovels, cranes and draglines
CEDAR RAPIDS, IOWA

Look what you can do

Soak it in Acid Water

It won't penetrate the live Neoprene cover. This jacket does more than keep water out; it will not swell and deteriorate when exposed to oil and grease.

Drag it over rock–

The tough cover will take abuse like an elephant's hide. Amerclad cables are famous for their abrasion resistance. They can be dragged over sharp rock and rough floors without damage.

Flex it–

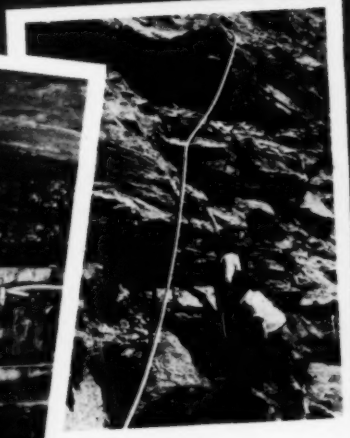
Amerclad Welding cables are made from extra-fine strands to eliminate strain on the operator's wrists. This also allows the cable to be easily snaked into restricted quarters.

AMERICAN STEEL & WIRE DIVISION
USS
TRADE MARKS
AMERICAN ELECTRICAL WIRE AND CABLE
UNITED STATES STEEL

with AMERCLAD:

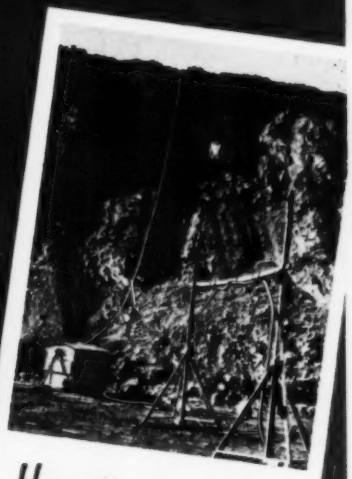
Reel it in or out-

Mine operators like the way Amerclad stands up under the continuous reeling necessary on so many mine machines. Here, the cable is reeled in and out—all day long—on a minimum diameter pulley.



Expose it to sunshine-

Amerclad cables are designed to give top service even when exposed to sunshine, ozone, oil or grease. This chemical protection, combined with the mechanical strength of Amerclad, assures you of long life even under the most punishing conditions.

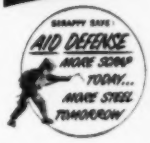


Hang it over cliffs -

Amerclad has the strength to resist abrasion. Even though it sways in the wind and grinds against rock particles, the tough Neoprene jacket will bounce back for more.

WRITE FOR INFORMATION. There is an Amerclad cable or cord to meet your exact needs. Amerclad cables are designed for specific uses on portable machinery, tools, motor and generator leads, welders, machine tools, appliances, mining machinery—wherever you need a heavy-duty cable that will give long life and freedom from trouble.

Get in touch with your nearest A S & W office or write: American Steel & Wire Division, Rockefeller Building, Cleveland 13, O.



AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL COMPANY, GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS

TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

U·S·S American Electrical Wire and Cable

UNITED STATES STEEL

readily available

AMERICAN
CYANAMID COMPANY
EXPLOSIVES

AMERICAN EXPLOSIVES

You can get quick deliveries of AMERICAN explosives and blasting supplies from our well located plants and distributing magazines. The AMERICAN line includes explosives exactly suited to your requirements—produced under intensive research, close chemical control, and unremitting care in manufacture. Always specify AMERICAN.

Capable Field Engineers
Are Available At Your Call

***High Explosives *Permissibles**

***Blasting Powder *Blasting Accessories**

AMERICAN Cyanamid COMPANY
EXPLOSIVES DEPARTMENT
30 ROCKEFELLER PLAZA • NEW YORK 20, N. Y.

Sales Offices: Pittsburgh, Pa. • Bluefield, W. Va. • Scranton, Pa. • Chicago, Ill. • Pottsville, Pa. • Maynard, Mass.

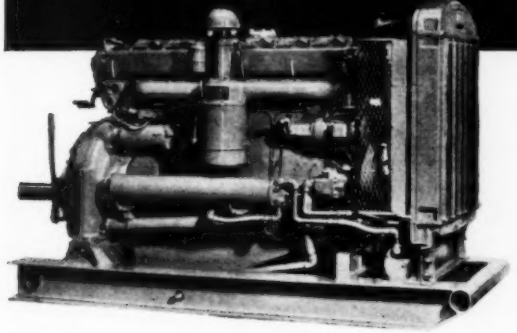
MURPHY DIESEL...

gives you easier starting . . .

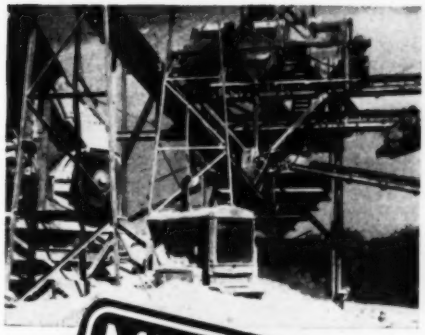
more economy . . . smoother

operation . . . better response

***because it has* UNIT FUEL INJECTION**



Cedarapids hammermill powered by a 150 H. P. Murphy Diesel in use at the Trego Quarries near Downington, Pa.



The performance of a diesel engine can be no better than the accuracy of control of fuel injection. That's why we say the unit injector is the heart of the Murphy Diesel. This simple, self-contained unit is both pump and nozzle. There are no high pressure fuel lines to interfere with smooth, accurate, precisely controlled fuel injection and rob you of power and fuel. In the Murphy Diesel, solid fuel completely atomized as a fine fog is injected directly into all parts of a plain, open combustion chamber. Ignition is accomplished solely by the heat of compression of the air within the cylinder. The precisely controlled rate of injection determines the speed and pressure of combustion, hence the power delivered and the amount of fuel used.

Translated into benefits for the user, Murphy Unit Fuel Injection makes possible greater power output with less fuel—better all around performance. Full details are given in the booklet *"10 Questions to Ask a Diesel Engine Salesman"*. Ask your Murphy Diesel Dealer for a copy or write direct.

MURPHY DIESEL COMPANY

5307 W. Burnham St., Milwaukee 14, Wisconsin

Sales, Parts and Service throughout the nation

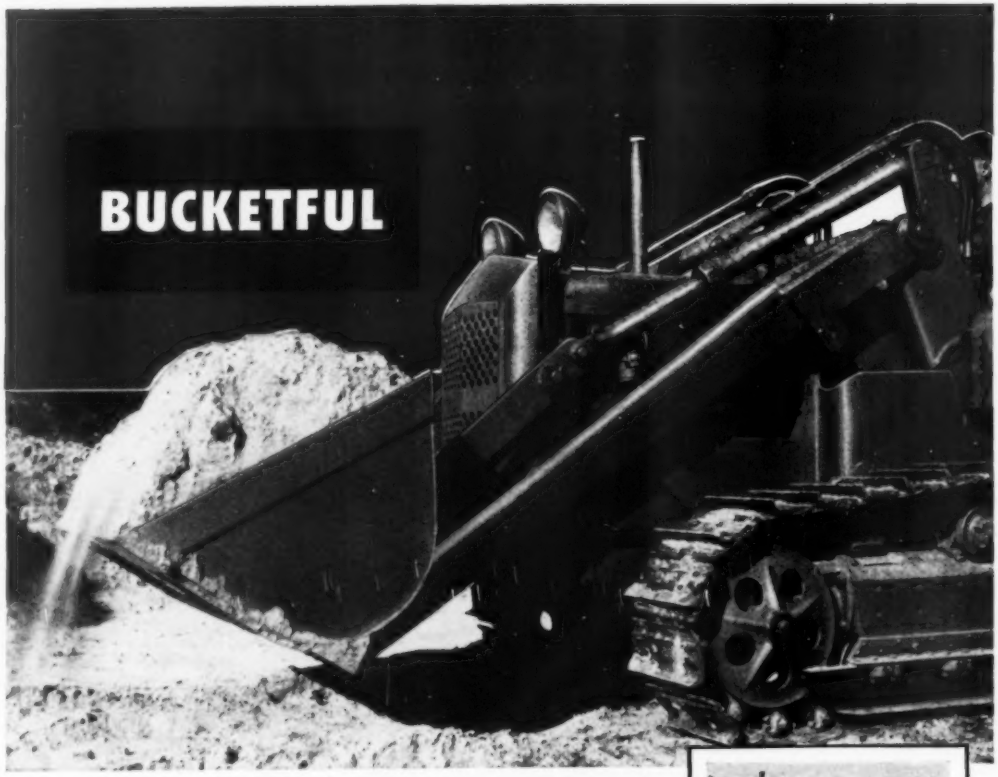
MURPHY DIESEL

218

Heavy duty power

for rock crushing

Murphy Diesel Engines and Power Units for portable or stationary crushing plants, 90 to 226 H. P. 1200 and 1400 RPM. Generator Sets, 60 to 140 K.W.



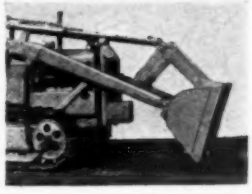
of Cost-Cutting Features

When it comes to cutting loading costs... stepping up profits, the Oliver Model "B" Crawler and Ware Loader is "loaded" with *plus* features.

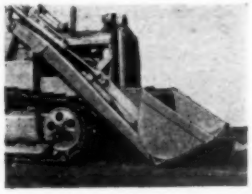
Take the hydraulically controlled bucket, for example. 110° bucket rotation and 28° "tilt back" give you a full bucket every time. "Breaking out" action is 3 times the lifting effort of the loader... a particularly important advantage when loading out hard-packed material or for stripping operations. Bucket level is automatically maintained when lifting load, preventing wasteful spillage. You can control speed of discharge... fast or slow, easily and gently. And, even with the "tilt back" action, you still have a 32° (from vertical) dump angle... a control range no other loader can match. You get bigger loads... *faster!*

The Oliver-Ware "B" loader was designed and built exclusively for Oliver Model "B" tractors. Its ideal fit with the tractor eliminates unneeded dead weight and assures maximum stability for the entire unit. The Oliver semi-rigid axle allows limited oscillation of the track, eliminating the possibility of track-frame distortion. A hydraulic shock absorber smooths out pressure surges... prevents damage to loader and tractor parts.

For complete information on how the Oliver-Ware Model "B" tractor loader can cut costs for you, see or write your Oliver Industrial Distributor.



Plenty of power, plus the wide angle of bucket rotation, assures faster, more positive digging. 28° "roll back" assures maximum break-out action for a full bucket every time.



THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of industrial wheel and crawler tractors

You PAY for a Uniformly Strong Belt You GET IT only when it's BWH ROTOCURED!

(Continuous, uniform cure prevents OCS*— weak spots in conventionally-made conveyor belts)

***Overcured Sections — present every 30′ to 40′ in all belts made by the flat press method**

If belts fail early, don't blame your supplier or your own operating methods. It may be inherent in the *manufacturing process!*

In flat press curing (the conventional method) segments of the belt at 30 to 40 foot intervals are overcured due to press overlaps. They're unavoidable because sections cured previously move forward *less than a full press length.* The result is a series of weakened structures about 2" to 4" wide. These "Achilles Heels" can shorten the life of the best of belts — and *do!*

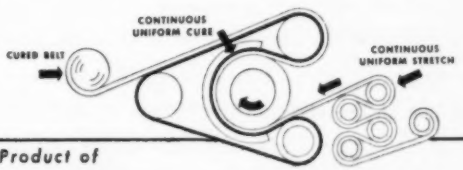
BWH engineers solved this problem with ROTOCURED CONVEYOR BELTS — made by *continuous, constant-motion* curing. You buy a structurally uniform and stronger belt because overlapping is eliminated by the process itself.

Users everywhere who have switched to BWH ROTOCURED BELTS are obtaining:

1 Increased belt flex life (as high as 40%)
2 Elimination of mechanical distortion at the press ends
3 Constant, uniform stretch
4 Uniform, abrasion-resistant covers

Your BWH distributor is abreast of the latest developments in belting. He can show you how ROTOCURE, a great advance, can cut the cost per ton of material conveyed. You'll want to ask him about BWH Transmission Belts also — they permit operation at lower tensions for longer belt life.

DIAGRAMMATIC SKETCH OF EXCLUSIVE ROTOCURE PROCESS



BWH
DEPENDABLE RUGGEDNESS

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

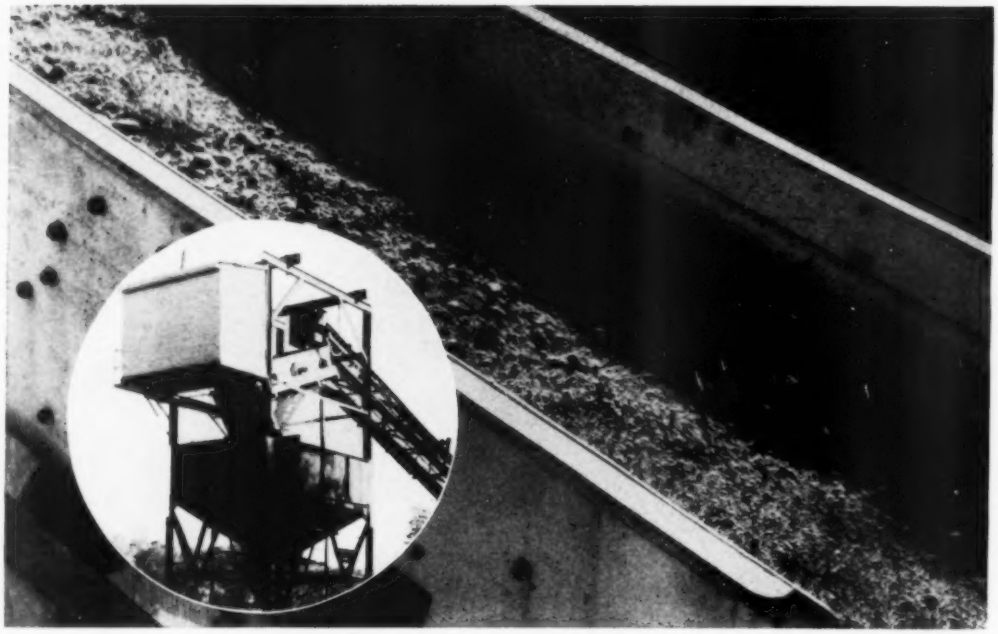
Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS. • P.O. BOX 1071, BOSTON 3, MASS., U. S. A.

Warehouse Stock, 111 N. Canal St., Chicago, Ill.

SECO DRY SCREENS SAND

AT THE DON C. RUSSO PLANT, ROCHESTER, NEW YORK



"BEST MASON SAND YOU EVER DELIVERED" That's What His Customers Say to Mr. Russo

It's a fact! The 4 x 12 type S Seco vibrating screen pictured here with 1/8 slotted opening is taking bank run sand at the Don C. Russo plant, and producing a fine, clean mason sand without any other preparation. Production is at the rate of approximately 45 tons per hour. This piece of equipment is so efficient that virtually no sand is carried over. Here's another on-the-job report that drives home the versatility and dependability of Seco vibrating screens. Back of this and other outstanding screening results of Seco vibrating screens is the patented equalizer assembly. Only Seco has this, and the resultant fully controlled true circular action. Get the whole Seco story. Send for Catalog No. 203.

SECO
TRUE CIRCULAR ACTION
VIBRATING SCREENS

LET SECO HELP YOU WITH YOUR DRY SCREENING PROBLEMS.

Whether it's sand, gravel, crushed stone or what, there's just the right Seco model to do the job for you . . . economically, speedily and of course, dependably.

SCREEN EQUIPMENT CO., INC.
1750 Walden Avenue, Buffalo 25, New York

In Canada:
United Steel Corp., Toronto, Ontario, Canada

On the Job Since '24

In '50 We added More

Still going strong after a quarter century. That's the record of the older motors shown in the above illustration. And when more motors were needed South Dakota State Cement again turned to Allis-Chalmers.

All these motors have the tough job of driving wet raw grinding ball mills. The two installed in 1924 are 400 hp, 1.0 pf, 180 rpm. The 1950 motor and a duplicate not shown are 350 hp, .8 pf, 180 rpm.

Designed for low starting kva, the motors drive the mills through magnetic clutches. The mills themselves and the Type H full-voltage starters were also built by Allis-Chalmers.

If you could examine the motors in this Rapid City installation, you would soon discover some of the reasons for their long life and low maintenance. You would find liberally proportioned bearings for trouble-free operation. You would find field coils securely supported and protected by adequate pole collars. And you would find many other important features.

Synchronous MOTORS

But there would be many features you would not be able to see. You wouldn't see the testing that assured satisfactory steel for the stator laminations. Nor the precisely controlled processing that results in long insulation life. Nor any of the many ways in which each motor is engineered to fit its specific application.

We suggest that you get a copy of our illustrated Bulletin 05B7648. In a few minutes, this *new* bulletin will show you why you'll be money and years ahead with Allis-Chalmers low-speed pedestal-bearing synchronous motors on the job. Ask your nearby A-C representative for a copy, or write to Allis-Chalmers, Milwaukee 1, Wisconsin. A-3533

ALLIS-CHALMERS

Crushin' Caliche near Corpus Christi

Big Texas material man cashes in on International performance

Caliche is one of the most widely used forms of crushed rock for highway construction in the Southwest—and it's a tonnage proposition for M. P. Wright, Jr.

One of the largest gravel, sand and caliche producers in the Corpus Christi area, Wright turns out road and driveway material from four large pits near Robstown, Texas.

Mainstays of his operations are eight International crawlers and stationary engines . . . and he figures that their low cost of operation and high power output make a real difference when it comes to adding up profits.

Internationals not only do more work per day, but, as M. P. (Chico) Wright puts it, *"Our Internationals can really take it as well as dish it out. If only all our equipment could stand up like our Internationals, our maintenance problems would sure be easier!"*

Want more proof? Get the low-down from your International Industrial Distributor or Power Unit Dealer. And put International *"Power that Pays"* to work for you!

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

ALL EQUIPMENT at M. P. Wright's caliche pit No. 3 is powered by an International UD-18 power unit with 4,000 hours under its belt. It turns out 150 cubic yards of material per hour, on 4 gallons of 12-cent diesel fuel.

INTERNATIONAL HARVESTER

INTERNATIONAL

POWER THAT PAYS

with Segmental Kiln Ends Cast in Thermalloy

These segmental kiln ends designed by Electro-Alloys will lengthen kiln life, reduce downtime, and greatly speed replacement. Records show kiln ends lasting as long as 15 years, thanks to the protection against warping provided by these heavy-duty Thermalloy ends.

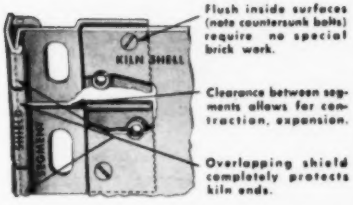
INSTALLATION IS EASIER because there's no special brick work needed. Segments are fastened with bolts countersunk on the inside of the kiln, eliminating any need for special brick work and providing a perfectly flush surface for the brick lining.

WARPING IS GREATLY REDUCED because, (1) segmental design allows for expansion and contraction without permanent set of the kiln shell, and (2) segments completely shield kiln ends from clinker and flame leakage to a depth of 16½" back from the mouth of the kiln. Yet you don't shorten the effective operating length of the kiln.

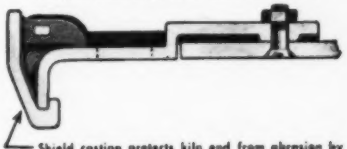
ONE-MAN REPLACEMENT is made possible with segmental design; the maximum weight to be handled at any one time is 35 lbs. Shield segments—which bear the brunt of flame leakage and clinker abrasion—can be removed by simply knocking out the pins which secure them, and replacing with new shield.

LENGTHEN SERVICE LIFE OF YOUR KILN next time you're replacing or installing a kiln end—let one of our engineers show you how we can lengthen its life for you. Simply write Electro-Alloys Division, 2031 Taylor St., Elyria, Ohio.

VIEW FROM INSIDE KILN


KILN SHELL
SEGMENT
Flush inside surfaces (note countersunk bolts) require no special brick work.
Clearance between segments allows for contraction, expansion.
Overlapping shield completely protects kiln ends.

Kiln is protected by high heat resistant Thermalloy, to distance of 16½" back from mouth.



*T. M. Reg. U. S. Pat. Off.

AMERICAN Brake Shoe COMPANY

ELECTRO-ALLOYS DIVISION
ELYRIA, OHIO

WHENEVER you consider excavators or cranes, be sure to measure all information by "KOEHRING WORK CAPACITY". Your Koehring distributor has important facts and figures that will let you prove for yourself the biggest profit advantage. See him soon.

Up to 79½ TONS lift capacity . . . up to 2½ YARDS dipper capacity

KOEHRING COMPANY
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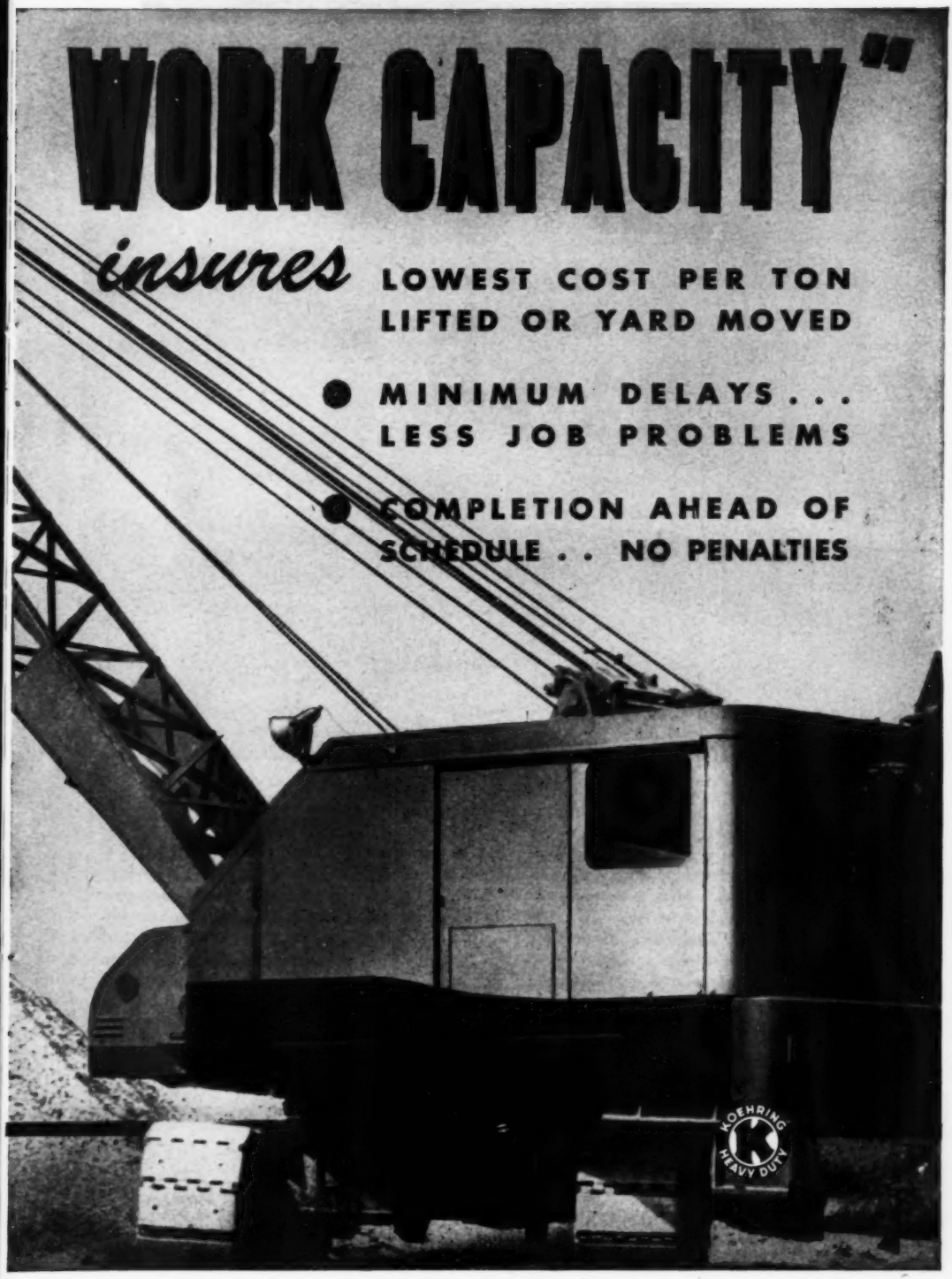
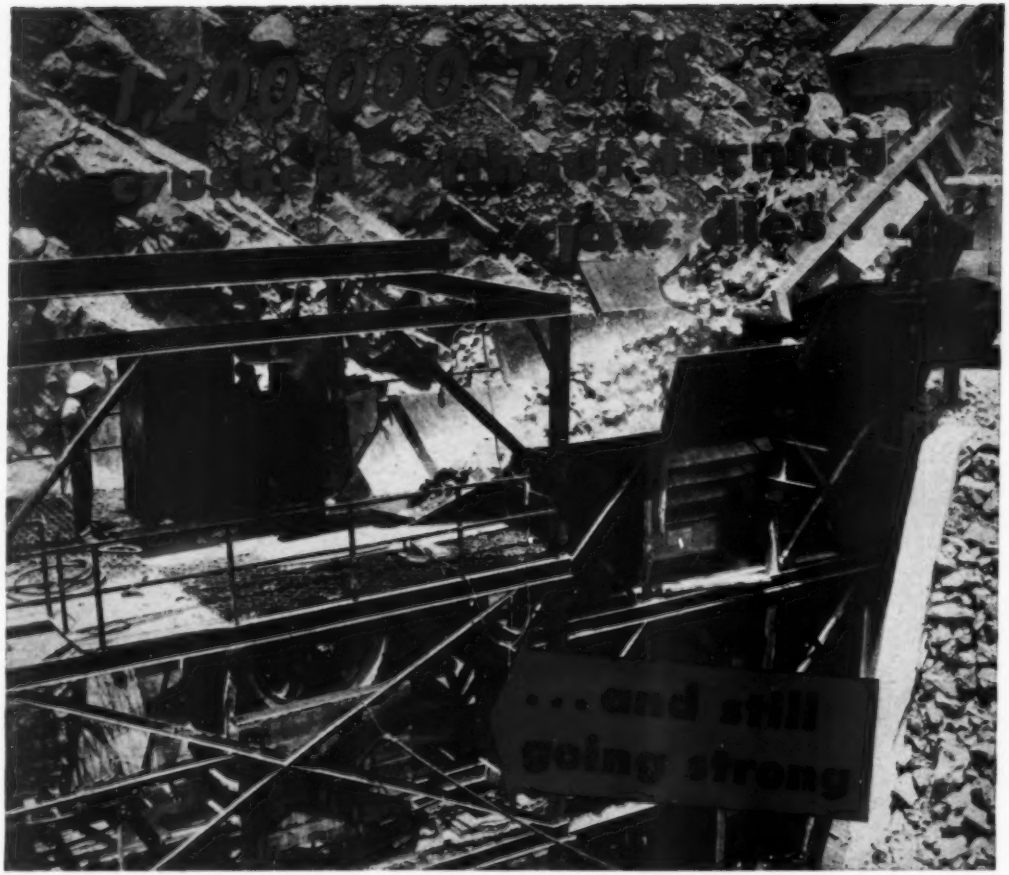
Subsidiaries: KWIK-MIX • PARSONS • JOHNSON


WORK CAPACITY"
insures
LOWEST COST PER TON LIFTED OR YARD MOVED
MINIMUM DELAYS . . . LESS JOB PROBLEMS
COMPLETION AHEAD OF SCHEDULE . . NO PENALTIES
KOEHRING
HEAVY DUTY



This Lippmann GRIZZLY KING Jaw Crusher at Alabama Aggregate Company, Pelham, Alabama, has crushed 1,200,000 tons of tough Blue Ridge rock since it was installed. Discharge opening is 5 inches. The management reports that this tremendous output has been attained without interruptions — that the reversible jaw dies have not been touched, not even reversed.

No other jaw crusher can match GRIZZLY KING'S capacity and performance. Extra-long curved and reversible jaw dies, engineered crushing action with alloy steel frame and jaw add up to the rock-eatingest crusher on the market today. The GRIZZLY KING is the world's highest capacity overhead eccentric jaw crusher and is available in sizes up to 36" x 48" opening.

Other Lippmann equipment at Alabama Aggregate includes an apron feeder and discharge belt conveyor with Lippmann Life-Sealed Ball Bearing Idlers. Leading operators the world over choose Lippmann for their crushing, screening and washing plants both stationary and portable. It will pay *you* to do so too. Lippmann Engineering Works, 4609 W. Mitchell St., Milwaukee 14, Wisconsin.

LEW LIPPMANN

His Records Prove It's Good Wire Rope

This man knows that his Bethlehem rope is giving him a good return on every dollar it cost him.

He isn't just guessing. He keeps records on the doings of all his wire ropes; figures that tell him the date they go to work, how much they accomplish, and when they're replaced. From his figures he can see which brand is *doing the most* for him over a period of time. He doesn't rely on general impressions or rough estimates. He *knows!*

Bethlehem urges that all users of wire rope do likewise—keep records of wire rope performance, expressed in units of work. How many ton-miles a rope accounts for; how many yards of rock it moves, how many cars of coal it hauls up a slope, etc. By doing so, the user can compare one brand against another; see for himself which brand is costing him the *least* for the actual work it does.

We know that in any such comparisons, Bethlehem wire rope will prove an outstanding value. Stack it against the field; keep your own figures. They'll tell you, in black and white, that a dollar invested in Bethlehem rope buys a mighty big dollar's worth of service.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

LET YOUR RECORDS TELL YOU!

No wonder "MULTICLONE" *is the leading name in the centrifugal recovery of dust and fly ash from all types of gases, hot or cold.*

No other mechanical recovery equipment has so many years of dust and fly ash recovery experience behind it . . . or has such uniformly high collecting efficiency . . . or provides so many other money-saving, space-saving advantages as MULTICLONE. The four advantages outlined below are by no means the complete MULTICLONE story, but are typical of the vital savings found *exclusively* in MULTICLONE equipment . . .

In dust and fly ash recovery

MULTICLONE COLLECTORS

***and only Multiclones* give vital advantages like these . . .**

Uniformly High Recovery:

MULTICLONE's multiple *small diameter* tubes—made possible by its exclusive vane design—whirl the dirty gases with greater centrifugal force, thus throwing out not only the large, medium and small particles, but also a high percentage of the *extremely small* particles of 10 microns and less. This, coupled with the fact that there are no pads or filters to become choked with recovered material, results in a more complete recovery of *all* suspended materials from the gas stream.

Long and narrow

Square

Maximum Adaptability:

In addition to its unusual compactness, the MULTICLONE is also unusually adaptable to various installation requirements. Where head room is low it can be installed with side-inlet side-outlet connections. Where side clearances are restricted, it can be installed with side-inlet top-outlet connections. In addition, without changing capacities, the shape of the unit can be varied—long and narrow, short and wide, or square—to fit restricted spaces . . . and its single-inlet single-outlet duct requirements permit greater flexibility and simpler installation. These savings slice installation costs, space requirements and insulating expense.

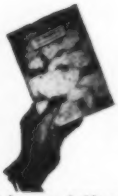
Space-Saving Compactness:

Plant space costs money—so be sure to check space requirements carefully. As shown in the accompanying chart, the MULTICLONE requires less floor space and less cubic space than any other unit of comparable capacity and performance. Translate these savings into today's high costs for plant space and you readily see the great importance of this one MULTICLONE advantage alone!

Make	Relative Space Requirements In Sq. Ft.	In Cu. Ft.
Multiclone	1.0	1.0
Collector A	2.1	1.8
Collector B	5.9	3.2
Collector C	6.8	3.9

Minimum Maintenance:

The MULTICLONE has no high speed moving parts to repair or replace . . . no pads or filters to clean or renew . . . nothing to choke the gas flow or increase draft losses as suspended materials are recovered. MULTICLONE draft losses remain uniformly low *at all times*. Further, the recovered material from an entire bank of tubes is collected in a *single* hopper—far easier to service and maintain than the multiple hoppers of conventional cyclone units.



FREE INFORMATIVE BOOKLET

This 32 page booklet outlines the basic principles of centrifugal dust recovery and shows the many ways MULTICLONE advantages assure higher recovery at lower overall costs. A free copy of this booklet will gladly be sent on request. Write today!

Before you decide on any recovery equipment be sure to get complete information on MULTICLONE advantages. A letter, wire or phone call to our nearest office places this information in your hands without obligation. Get all the facts and you will get MULTICLONE Collectors!

WESTERN Precipitation CORPORATION

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Offices: 1015 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA
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PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

FOR TOUGH TONNAGE

Homocord CONVEYOR BE

We pay more for Homocord, but it costs us less!" • That's what users say . . . and they won't take any other conveyor belt. It makes sense, too. Where tonnage is toughest, Homocord has been known to outlast 2 or 3 ordinary conveyor belts. Figure cost of belts, plus cost of repeated installations, and Homocord proves the biggest bargain you can get • Its special construction—cushioned and flexible—absorbs impact that other belts can't take. Send for Bulletin 6906 and read about the Guillotine Test that proves our point • The same engineering goes into our hose, V-belts and flat belts. Get your Manhattan representative to show you.

R/M

MANHATTAN RUBBER DIVISION—PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Packings • Brake Linings • Brake Blocks
Clutch Facings • Asbestos Textiles • Sintered Metal Parts • Bowling Balls

4-wheel drive PAYLOADER®

Palmetto Quarries takes tons of tough, stubborn granite from its Columbia, South Carolina quarry. With two large electric shovels and a fleet of 15 ton trailer trucks to keep moving, there are lots of chores for its 1½ yd. Model HM "PAYLOADER" tractor-shovel . . . there's clean-up around the shovels, starting and pushing stalled trucks, building and maintenance of roadways, loading odd lots of rock, cleaning-up around conveyors, and many other jobs.

This 4-wheel-drive "PAYLOADER" replaced a big crawler tractor and the management cites the following benefits: (1) does all the work the tractor did (2) gets around faster (3) shows savings in operation cost over tracks (4) provides an additional loading tool and (5) the tractor operator is much happier.

Model HM's are helping quarry and pit operators all over the country to increase production and reduce costs. You are invited to find out how "PAYLOADERS" can help you too. The Frank G. Hough Co., 750 Sunnyside Avenue, Libertyville, Illinois.

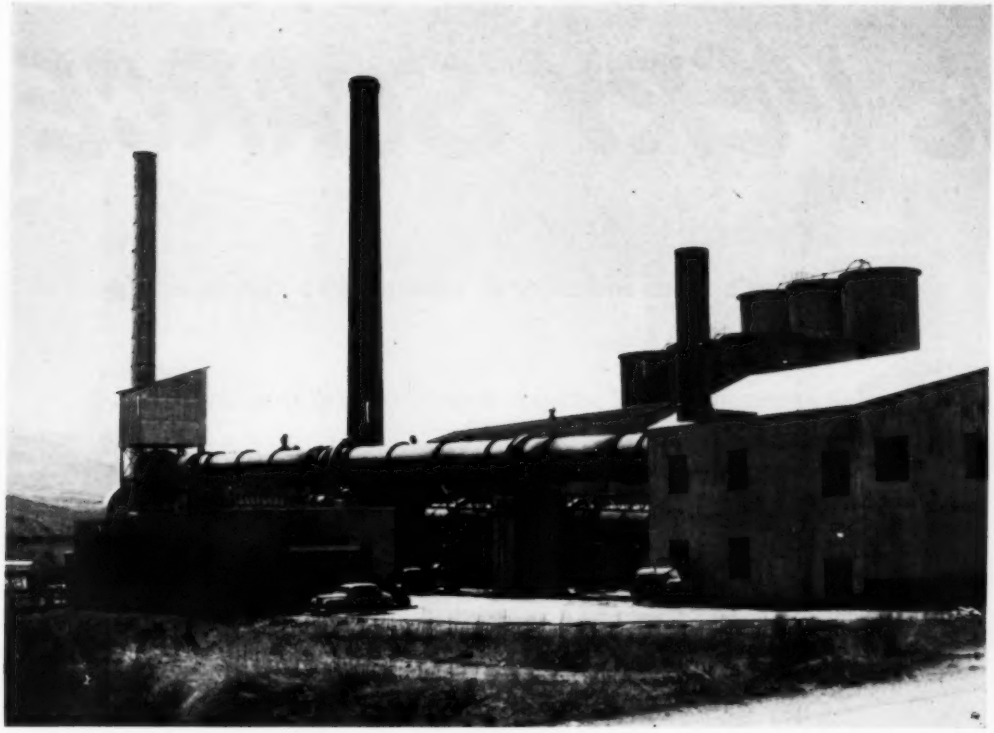
WRITE for catalog on the 1½ yd. Model HM or the six other sizes of "PAYLOADERS" down to 12 cu. ft. bucket capacity. There's no obligation.

SAY "HUFF"

PAYLOADER®

THE FRANK G. HOUGH CO. Since 1928

IN THE MOUNTAIN STATE OF IDAHO



Near Pocatello, Idaho, this expanded and modernized plant of the Idaho Portland Cement Company is contributing its share toward the rapid expansion of this important area. The kiln installation, slurry tank and additional grinding capacity in a new mill building along with other additions represent the latest methods in the design and construction of cement plants. This is another satisfied owner added to the many other companies using engineering and construction services supplied by the Macdonald Engineering Company.

For the design and construction of your new plant, or plant additions, call on any of our offices.

Our business is making your business more profitable

MACDONALD ENGINEERING CO.

Constructing Engineers

885 Bryant Street
San Francisco 3, California
Telephone — UNderhill 3-0580

188 W. Randolph St.
Chicago 1, Illinois

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STEEL SCRAP is VERY SCARCE

America's steel industry is essential to the nation's defense.

Large quantities of scrap are used by the steel industry.

YOU—in your plant or on your property have scrap that's urgently needed.

Unless you turn your scrap over to your scrap dealer, the steel so vital to American industry cannot be made.

GET YOUR SCRAP MOVING...TODAY

The Colorado Fuel and Iron Corporation

CF&I

AMERICAN WIRE FABRICS CORPORATION, Mt. Wolf, Pa.
CLAYMONT STEEL CORPORATION, Claymont, Del.
THE CALIFORNIA WIRE CLOTH CORPORATION, Oakland, Calif.
WICKWIRE SPENCER STEEL DIVISION, New York, N.Y.

New Dry Rolling Toggle

Dry rolling toggle was developed by Allis-Chalmers for A-1 jaw crushers ...can be installed on other jaw crushers now in use.

The Allis-Chalmers representative in your area will be glad to give you complete facts about A-1 jaw crushers. Allis-Chalmers, Milwaukee 1, Wisconsin.

✓ Outlasts Conventional Toggles
✓ Reduces Maintenance Costs

NO LUBRICATION True rolling action of toggle ends and seats requires no lubrication. No oil lines or lubricant needed. No oil drip from toggles to pit below crusher. Increased safety and cleanliness!

ROLLING ACTION Replaces friction-producing sliding action. Toggle bearings are cold even after 16 hours of tough crushing!

LESS WEAR Rolling rather than sliding action between toggle ends and seats results in greatly reduced wear. Abrasive dust has little or no destructive effect.

LASTS LONGER Improved toggle is safety shear type. Only inexpensive rivets shear off when unbreakable materials enter the crushing chamber. No need to replace the whole toggle! Rivets can be replaced easily in the field.

A-1 and Pulverator are Allis-Chalmers trademarks A-3517

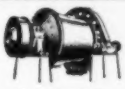
ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Pulverators

Vibrating Screens

Jaw Crushers


Grinding Mills

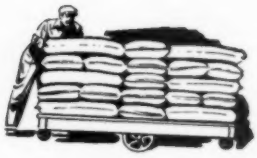
Gyratory Crushers

Kilns, Coolers, Dryers

NO. 3
OF A SERIES
ON HOW TO

Stretch a MULTIWALL Paper Bag

Kraft paper supplies are short. So it is important for you to get the best use from your multiwalls. Here are some of the ways to stretch them . . .



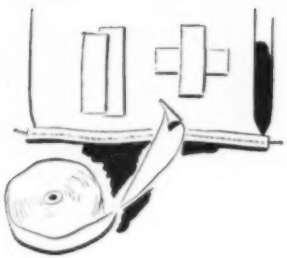
Use of Hand Trucks . . . Trucks (and chutes and conveyors) should be free of protruding nails, splinters, etc.

Two-wheel trucks should have wide, extended lips, as narrow-blade lips cut into the sacks. Wood or metal lip extensions may be added. Sacks should be piled flat. Small wooden pallets may be used if the truck lip is adequate.

On four-wheel trucks, sacks should be stacked flat and even with the truck edges, with the end sacks interlocked.

How to Lift and Carry . . . One man should pick up the sack with his hands underneath it, preferably at diagonal corners. Two men should lift the sack with the hands underneath it, supporting the four corners.

Never grip or pull at the corners. Never drag the sack across the floor. Never, with a tied closure, pull at the closed end. Carry the sack with the edge resting against the body, or flat on the shoulder.



How to Repair or Overslip Damaged Bags

If seriously damaged, slip an overslip over the damaged bag (with contents intact), then close with a wire-tie or string, or roll the top down and staple it.

If the damage is minor, or an overslip is not available: **1.** Straighten paper near the tear; place torn ply or plies in original position; clean off any loose material or dirt. **2.** Apply moistened gummed tape, cut 4 or 5 inches longer than the tear. Use single, overlapping, or crossed patches, depending on size and kind of tear. **3.** If more than one ply is severely ruptured, patch each ply separately.

A 3-inch, 40-lb. or 50-lb. gummed kraft tape is satisfactory. Carry repaired sacks with the patched side up.

Want the Whole Story?

Ask your Bemis Man for free, illustrated copy of Bemis Multiwall Packaging Guide. It deals with Storage, Filling and Closing, Handling, Palletizing and other important subjects.

• • •

Maybe Cotton Bags are Your Answer . . . if you can't get all of the multiwalls you need. Cotton bags are available . . . and Bemis is the leading cotton bag source

Bemis

BEMIS BRO BAG COMPANY

St. Louis 2, Missouri

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT & QUARRY

With a GOCORP!

You don't drive a nail with a rubber hammer . . . nor can you get the best block compaction when pallet support depends on rubber or springs. GOCORP clamps the pallet to the mold . . . Vibrates the combination (pallet and mold) with sharp, swift sledge hammer blows . . . No cushioned deceleration common to other machines. Whiplike direction change at each end of the stroke means faster pickup during the stroke and a harder packing blow.

With GOCORP plain pallet machines . . . the King—6 at a time . . . the Senior (illustrated)—3 at a time . . . the Prince—2 at a time . . . You also get:

- **100% Hydraulic Operation**—adjust any operation without affecting others.
- **Main Hopper Feed**—no old fashioned feed drawer.
- **One Man Operation**—reduces labor cost.
- **Under Machine Pallet Return**—saves space.
- **The BEST in service.**
- **Other GoCorp Equipment**—Junior Cored Pallet Block Machines . . . Batch Mixers . . . Pipe and Tile Machines.

THE GENE OLSEN CORP.
403 GRACE ST. • ADRIAN, MICH. • PHONE 2120

To convert from dry batch to Central Mix, for a package central mix plant, or a semi-portable plant, write:

SuPREMIX, Incorporated
(an affiliate of GoCorp)
411 Grace Street
Adrian, Michigan

HERE'S WHY THEY ASK FOR 'INCOR':

Gotham Cheers!

10 DAYS SAVED IN REPAVING KEY SECTIONS OF HENRY HUDSON PARKWAY

● Repaving this key section of Henry Hudson Parkway's northbound lane illustrates how good job planning minimizes traffic interference. Using 'INCOR' AIR-ENTRAINING 24-HOUR CEMENT for the dual advantage of increased workability and durability, plus dependable 24-hour service strength, heavy traffic was maintained through the job at all times. And the handsome new 'Incor' roadway was in full use ten days ahead of schedule! Good example of modern efficiency in highway building and ready-mix service, as well as of this clear-cut fact:

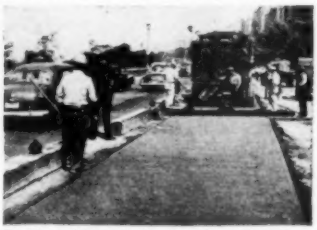
When you want to beat a record, without sacrificing quality, you can't beat 'Incor'*, America's FIRST High-early-strength Air-entraining Portland Cement.

*Reg. U. S. Pat. Off.

ANOTHER EXAMPLE OF DUAL ADVANTAGE OF 'INCOR' AIR-ENTRAINING 24-HOUR CEMENT

Traffic used 3 lanes, while 2" asphalt topping and 3" of old concrete base were dug out and two westerly lanes concreted.

All hands remarked at the cohesive, highly-plastic quality of the 3½" slump 'Incor' air-entrained concrete.



Finishing followed closely behind the mixer —highly-plastic 'Incor' mix expedited placing and finishing.

The first two lanes were quickly opened to traffic, as work went ahead at top speed on the next two lanes.

Completed 10 days ahead of time—result of paving know-how, on-time ready-mix service, and typical 'Incor' performance.

HENRY HUDSON PARKWAY REPAVING
— between 95th and 98th Streets

Supervision:
DEPARTMENT OF PARKS, CITY OF NEW YORK

Contractor: **QUEENS STRUCTURES, INC.,**
Woodside, N. Y.

Ready-Mix 'Incor' Air-Entrained Concrete:
COLONIAL SAND & STONE CO., INC.,
New York

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N. Y. • BETHLEHEM, PA. • BIRMINGHAM
BOSTON • CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS
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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS. 125,000,000 SACKS ANNUAL CAPACITY

CEILING UNLIMITED

THE three main components of the concrete industries—concrete masonry units, ready-mixed concrete, and concrete pipe—all appear to have set new production records in the year just closed. Block production soared to the almost astronomical total of 1,650,000,000 8-in. equivalents, an increase of about 18 percent, or some 250,000,000 units, over the previous high reached in 1950. Production of ready-mixed concrete totaled about 36,000,000 cu. yd., a gain of 15 percent or almost 5,000,000 cu. yd. over the preceding year. Concrete pipe production totaled over 10,000,000 tons for the first time in history, an increase of 13 or 14 percent over the 9,025,000 tons produced in 1950.

These and other salient statistics of the three industries are discussed in detail elsewhere in this issue. What we would like to comment on here is the long-term trend of production in the concrete field. The overall use of concrete has increased steadily during the six years since V-J day, and new records have been set year after year. The net gain in practically all branches of the products and ready-mix field far exceeds the net gain in total volume of construction during the same period, notwithstanding the fact that construction itself has risen to the highest levels in history.

Leaders and spokesmen of the affected industries have had a tendency to regard and to refer to the phenomenon as a boom, with the subtle implication that it was a temporary thing, and that sooner or later concrete would inevitably resume its normal relationship to the construction picture as a whole. We doubt if this cautious view is any longer compatible with the facts. Unless we misread the signs completely, concrete has achieved, by virtue of its economy, convenience, performance, and wide availability, an entirely new and enduring status as the nation's foremost material of construction.

Deeper penetration of existing markets at the expense of competitive materials has been a major factor in the steady production gains of recent years. Based on estimated production, concrete masonry units accounted for over 70 percent of the total wall volume constructed during 1951. In 1937 the block industry's share of total wall volume was only a little over 20 percent, and clay brick accounted for about 65 percent of the total. In similar fashion, ready-mixed concrete year after year has accounted for an increasingly large proportion of the total volume of concrete poured, and the concrete pipe industry has won an increasingly large share of the total business in its field.

Inevitably the rate of gain must level off somewhat, but we doubt if anything even resembling a saturation point will be approached for many years to come. The tremendous versatility of concrete suggests that in the years ahead it will invade many fields that are at present untouched. Recently developed design and construction methods in connection with prestressing alone promises to open a vast new frontier for both precast and cast-in-place concrete. Steady technological advancement along many lines will in the future, as it has in the past, afford all branches of the concrete industries maximum assurance of continued growth and prosperity.

William M. Avery

King of FORK TRUCKS for OUTDOOR HANDLING

TRACTO-LIFT AT WORK

Above: Tracto-Lift makes transporting or yard stacking easy.
Below: Tracto-Lift speeds handling of heavy loads "in the rough."

TRACTO-LIFT DOES JOBS IMPOSSIBLE WITH OTHER EQUIPMENT

Now you can go **anywhere** with your fork lift truck! Tracto-Lift, utilizing large pneumatic tires and basic tractor transmission, gives you more traction, more flotation, greater roadability and greater work capacity. It can "go places and do things" that may not be accomplished with other equipment. With Tracto-Lift's ample clearance, rough yards are no problem . . for the first time outside, unpaved space may be used for extra storage. Free valuable floor space, save the cost of an expensive building. Cut labor costs. Speed up any materials handling. Built for long, rugged dependable service.

ECONOMICAL TO OPERATE

Tracto-Lift will pay for itself in a short time. Low first cost, economical to maintain. No servicing problems with Tracto-Lift. Basic unit is standard industrial tractor, parts and service are available throughout the world.

WHAT ARE YOUR STORAGE PROBLEMS?

If you have an outside storage problem, we can help you. For full information on how Tracto-Lift can do the job you require more economically and more efficiently than any other equipment, write:

Tracto-Lift Company,
Division C,
2011 Baltimore,
Kansas City, 8, Mo.

TRACTO COMPANY
2011 BALTIMORE
Kansas City 8, Mo.

news of the concrete industries

OPS Grants Industry Overriding Regulation 21 For Price Adjustments

Cheering news came from Washington in Vincent Ahearn's anouncement that the Office of Price Stabilization had given the ready-mixed concrete industry the benefit of the Capehart Amendment to the Defense Production Act of 1950. General Overriding Regulation, GOR 21, applies to industries which are still subject to the General Ceiling Price Regulation, and is therefore applicable to this industry.

The new order provides that if net sales were less than $1,000,000 in the last complete fiscal year ended not later than July 31, 1951, the operator should send in an application to the OPS office for the district in which the principal place of business is located. If the dollar volume equals or exceeds $1,000,000 in that fiscal year, the application should be sent to OPS, Washington 25, D. C., attention of the Building Materials Division.

General Overriding Regulation 20 is available as an alternative to companies whose net sales did *not* exceed $250,000 for the last fiscal year ended not later than July 31, 1951. Use of GOR 21 or GOR 20 is optional. Neither regulation sets prices; General Ceiling Price Regulation establishes ceiling prices for the industry. The sole function of GOR 20 and GOR 21 is to provide a procedure under which any eligible business can apply for new ceilings if the operator feels the use of the Capehart formula will be beneficial.

Text of the GOR 21 Statement of Considerations follows:

"This general overriding regulation establishes the basic procedure in accordance with which most business concerns will be authorized to apply for an adjustment of their ceiling prices under the so-caled Capehart Amendment (section 402 (d) (4) of the Defense Production Act of 1950, as amended). It is the most general of a series of regulations which are being issued for that purpose."

Luria Brothers & Co. Buys $1,000,000 Rosoff Equipment

Mining, tunneling, and construction equipment worth approximately $1,000,000 used by the late Samuel R. Rosoff, noted subway builder and aggregates producer, has been purchesd by Luria Brothers and Company, Inc., Philadelphia.

Included in the lot are hoists, cranes, bulldozers, pumps and blowers, electrical equipment, compressors, mining locomotives, construction apparatus, and also several steel warehouse buildings at Randallstown, Md. It was said to be the largest individual transaction of its kind in recent years.

Autoclave Products Assn. To Meet at New Orleans

On February 27 the opening sessions of the 46th annual convention of the Autoclave Building Products Association will be held at the Roosevelt Hotel in New Orleans. The affair will be a three-day event, according to an announcement released by Dale Cobb, secretary-treasurer.

Those in charge of the program have scheduled features of interest to members and also to others who operate autoclaves (high-pressure steam-curing kilns). Developments in sand-lime (calcium-silicate) building materials and lightweight concrete products will be stressed in the program.

McKinney Heads R.M.C. Firm Once Guided by Dolly Gray

E. Kirk McKinney, president of the Jefferson National Life Insurance Company, was recently elected president of the Ready Mixed Concrete Corporation of Indianapolis, Ind. Mr. McKinney succeeds Mrs. Edna Douglas Gray, widow of C. (Dolly) Gray, who headed the firm for several years. Mrs. Gray has sold her interest in the business. The firm was founded in 1931 by the late Harvey A. Tutewiler.

At the time of Mr. McKinney's election to the presidency of the concrete firm a merger of the Jefferson National Underwriters and the Ready Mixed Concrete Corporation was announced. Jefferson Underwriters, previously listed as the parent organization, was absorbed in the "downstairs" merger into Ready Mixed, which had been a subsidiary.

A maximum total capacity of 2,500 cu. yd. of concrete per day is recorded for the four plants of the Ready Mixed Concrete Corporation.

Coming Events

January 16 and 17, 1952—Milwaukee. 32nd annual convention, Wisconsin Concrete Products Assn. Plankinton House.

February 11, 1952 (week of)—Chicago. 22nd annual convention and exhibit, National Ready Mixed Concrete Association. Conrad Hilton Hotel.

February 14-16, 1952 — Windsor, Ont. Third annual meeting, National Concrete Products Association (of Canada) and exhibit. Prince Edward Hotel.

February 18-20, 1952—New York. 32nd annual convention, National Concrete Masonry Association. Hotel New Yorker.

February 26-28, 1952—Cincinnati. 48th annual convention, American Concrete Institute. Netherland Plaza Hotel.

February 27 and 28, 1952—Chicago. Third annual convention and meeting, American Concrete Pressure Pipe Association. Drake Hotel.

February 27-29, 1952—New Orleans. 46th annual convention, Autoclave Building Products Association. Roosevelt Hotel.

February 28-March 1, 1952—Chicago. 44th annual convention and meeting, American Concrete Pipe Association. Drake Hotel.

March 3-5, 1952—Denver. Second annual convention and meeting, American Concrete Agricultural Pipe Association. The Brown Palace Hotel.

Programs Planned for N.S.G.A., N.R.M.C.A. Annual Conventions

MONDAY FEBRUARY 11

Proceedings will start Monday, February 11, with the annual meeting of the two boards of directors. The National Sand and Gravel Association board will meet that morning; the N.S.G.A. board and the National Ready Mixed Concrete Association board will hold a joint luncheon; and the N.R.M.C.A. board will meet in the afternoon. Primarily the business of the two boards will be to consider the financial reports of the respective associations and to adopt a budget for each. At the luncheon the boards will make a final decision on the place and date of the 1954 convention-exhibit.

TUESDAY FEBRUARY 12

The two associations will open their conventions with a joint session on Tuesday, February 12. The two presidents will make their respective addresses. The next speaker will be John L. Haynes, director of the National Production Authority's Building Materials Division, who will talk about the prospective allocation of controlled materials for defense and non-defense construction in 1952. Mr. Haynes will be followed by two prominent national figures in the highway field, who will talk about the accumulated highway requirements of the United States.

On Tuesday afternoon, the N.R.M.C.A. will hold its session on merchandising with Robert C. Collins of Philadelphia as moderator. Mr. Collins will set the stage with a general review of the merchandising problems of the ready-mixed concrete industry as they were encountered in 1951. He will discuss relationships between the cement industry and the ready-mixed concrete industry, and will talk about the function of those relationships in the past and in the future. Mr. Collins will present a panel of four outstanding ready-mix producers who will deal with the following appropriate phases of the merchandising question: lightweight aggregates; the growing problem of weight restrictions; problems of overloading; use of admixtures—air-entrainment, and otherwise; controlling mixing and agitating time; the problem of additional mixing water at the job; methods of discharge which will avoid segregation; and advertising, both radio and newspaper.

WEDNESDAY FEBRUARY 13

Wednesday morning will be devoted to a joint session of the two associations. Fred Bergraff of the Highway Research Board will talk about axle loads, and Stanton Walker will submit his annual report. G. Donald Kennedy of the Portland Cement Association will discuss concrete for highways, and K. B. Wood of Purdue University, Lafayette, Ind., will discuss concrete pavement life in relation to aggregates.

The two associations will have a joint luncheon on Wednesday. Clarence Manion, Dean of the Law School, University of Notre Dame, and author of *The Key to Peace*, will be the featured speaker The N.S.G.A. will have a two-hour session beginning at 3 p.m. on Wednesday, with their tax counsel, John T. Sapienza, leading a discussion on percentage depletion.

THURSDAY FEBRUARY 14

Again on Thursday morning the N.S.G.A. and the N.R.M.C.A. will get together for a joint meeting. There will be an informal discussion of priorities and the allocation of materials by NPA, price control, and wage and salary control. The emphasis will be on audience

List of Exhibitors—N.R.M.C.A.—N.S.G.A.

Allis-Chalmers Manufacturing Co., Milwaukee, Wis.
American Manganese Steel Division of The American Brake Shoe & Foundry Co., Chicago Heights, Ill.
Austin-Western Co., Aurora, Ill.
Autolene Lubricants Co., Denver, Colo.
Bacon-Pietsch Co., Inc., New York, N. Y.
Barber-Greene Co., Aurora, Ill.
Blaw-Knox Division of Blaw-Knox Co., Pittsburgh, Pa.
Bucyrus-Erie Co., South Milwaukee, Wis.
The Buda Co., Harvey, Ill.
Butler Bin Co., Waukesha, Wis.
Caterpillar Tractor Co., Peoria, Ill.
Chain Belt Co., Milwaukee, Wis.
Cleaver-Brooks Co., Milwaukee, Wis.
Concrete, Chicago, Ill.
Concrete Transport Mixer Co., St. Louis, Mo.
Construction Machinery Co., Waterloo, Ia.
Contractors and Engineers Monthly, New York, N. Y.
Cook Bros. Equipment Co., Los Angeles, Calif.
Cross Engineering Co., Carbondale, Pa.
Cummins Engine Co., Inc., Columbus, Ind.
Deister Machine Co., Fort Wayne, Ind.
Dewey & Almy Chemical Co., Cambridge, Mass.
Diamond Iron Works, Inc., Minneapolis, Minn.
Dumpcrete Division, Maxon Construction Co., Inc., Dayton, O.
Eagle Iron Works, Des Moines, Ia.
The Euclid Road Machinery Co., Cleveland, O.
Flexible Steel Lacing Co., Chicago, Ill.
General Electric Co., Schenectady, N. Y.
Harnischfeger Corp., Milwaukee, Wis.
Harristeel Products Co., New York, N. Y.
The Heltzel Steel Form & Iron Co., Warren, O.
Hendrick Manufacturing Co., Carbondale, Pa.
Hercules Motors Corp., Canton, O.
Hewitt-Robins, Inc., Passaic, N. J.
The Frank G. Hough Co., Libertyville, Ill.
Imperial Construction Equipment Co., Melrose Park, Ill.
International Harvester Co., Chicago, Ill.
Iowa Manufacturing Co., Cedar Rapids, Ia.
The Jaeger Machine Co., Columbus, O.
The C. S. Johnson Co., Champaign, Ill.
Kensington Steel Co., Chicago, Ill.
Koehring Co., Milwaukee, Wis.
Lima-Hamilton Division, Baldwin-Lima-Hamilton Corp., Lima, O.
Link-Belt Co., Chicago, Ill.
Link-Belt Speeder Corp., Cedar Rapids, Ia.
Littleford Bros., Inc., Cincinnati, O.
The Ludlow-Saylor Wire Co., St. Louis, Mo.
McLanahan & Stone Corp., Hollidaysburg, Pa.
Mack Manufacturing Corp., New York, N. Y.
Marion Power Shovel Co., Marion, O.
Marquette Cement Manufacturing Co., Chicago, Ill.
The Master Builders Co., Cleveland, O.
W. R. Meadows, Inc., Elgin, Ill.
Medusa Portland Cement Co., Cleveland, O.
Nordberg Manufacturing Co., Milwaukee, Wis.
Northwest Engineering Co., Chicago, Ill.
The Osgood Co., Marion, O.
Pettibone Mulliken Corp., Chicago, Ill.
Pioneer Engineering Works, Inc., Minneapolis, Minn.
Pit and Quarry, Chicago, Ill.
Rock Products, Chicago, Ill.
Sauerman Bros., Chicago, Ill.
Scientific Concrete Service Corp., Elizabeth, N. J.
Screen Equipment Co., Inc., Buffalo, N. Y.
Servicised Products Corp., Chicago, Ill.
Sika Chemical Corp., Passaic, N. J.
Simplicity Engineering Co., Durand, Mich.
Smith Engineering Works, Milwaukee, Wis.
The T. L. Smith Co., Milwaukee, Wis.
Solvay Sales Division, Allied Chemical & Dye Corp., New York, N. Y.
Stedman Foundry and Machine Co., Inc., Aurora, Ind.
Stephens-Adamson Manufacturing Co., Aurora, Ill.
Sturtevant Mill Co., Boston, Mass.
SuPremix, Inc., Adrian, Mich.
Symons Clamp & Manufacturing Co., Chicago, Ill.
W. O. & M. W. Talcott, Inc., Providence, R. I.
Taylor-Wharton Iron and Steel Co., High Bridge, N. J.
Thew Shovel Co., Lorain, O.
The Transmission & Gear Co., Dearborn, Mich.
The W. S. Tyler Co., Cleveland, O.
Union Wire Rope Corp., Kansas City, Mo.
The White Motor Co., Cleveland, O.
Charles E. Wood Co., Milwaukee, Wis.
Worthington Pump and Machinery Corp., Dunellen, N. J.
Woven Wire Fabrics Division, John A. Roebling's Sons Co., Roebling, N. J.

participation. There will be a panel of four members with a moderator. The panel members will be Walter Acheson of the Office of Price Stabilization; George Roll of the Defense Materials Administration; Charles Horsky, association counsel; and Vincent P. Ahearn, executive secretary.

There will be a simultaneous N.S.G.A. session on operating problems on Thursday morning. The program is being arranged by the association's committee on operating problems, with J. L. Shiely Jr. as chairman. R. K. Humphries will discuss the Elliot plant of the Pacific Coast Aggregates Corporation. Other program material, dealing with fine aggregate production, is also being arranged for presentation at this session.

There will be a joint N.S.G.A. and N.R.M.C.A. session on Thursday afternoon. Vernon E. Lohr, chairman of the collective bargaining committee for the Southern California Rock Products Association, will describe the procedures used by the two Southern California associations in collective bargaining negotiations with AFL unions, which led to the recent renewal of contracts with these unions. F. E. Schouweiler, president of the Old Fort Supply Company, Inc., Fort Wayne, Ind., will tell about the successful outcome of the firm's suit against the Common Laborers Union in Muncie, Ind., in which the organization recovered damages against the union for its effort to bar the company from delivering concrete. Mr. Horsky will talk about recent decisions of the National Labor Relations Board which affected the two industries, including group bargaining, secondary boycotts, the collection of union dues, and other cases which grew out of provisions of the Taft-Hartley Act. During this Thursday afternoon joint session, Mr. Ahearn will present his annual report.

FRIDAY FEBRUARY 15

On Friday the two associations will hold separate concluding sessions. William Edward Hole, president of the American Aggregates Corporation, Greenville, O., will speak at the N.S.G.A. session on the growing problem of zoning restrictions and rehabilitation of worked-out sand and gravel properties. C. E. Proudley of the North Carolina Highway Department will discuss the use of sand and gravel in bituminous mixtures. The trophies will be awarded to the N.S.G.A. safety contest winners at this gathering. The N.S.G.A. will also hold their election of officers for 1952.

The N.R.M.C.A. session will be featured by the presentation of the trophies, donated by PIT AND QUARRY, to the winners of the association's annual safety contest. Ralph Anderson, president of the W. E. Anderson Sons Company, Columbus, O., whose firm won the Class A (plants producing more than 100,000 cu. yd.) contest, will tell how his concern became interested in safety and how it has paid off. A paper from the laboratory staff will be distributed. Election of officers for 1952 will be held.

REGISTRATION AND ENTERTAINMENT PLANS

The registration desk will be open at 2 p.m. on Friday, February 8, in the writing room on the mezzanine floor of the Conrad Hilton Hotel. The show is expected to be one of the finest in the history of the associations, and a record gathering is anticipated.

A brunch will be served the ladies at 11 a.m. on Tuesday. The entertainment at this affair will be furnished by the young lady who made such a hit at the 1950 conventoin with her interpretation of "South Pacific." This year she will tell the story and sing the songs of "The King and I." On Tuesday evening the associations will hold their annual manufacturer's reception.

George W. Kulhavy Named President of Mo-Kan Concrete Products Assn.

At the first annual meeting of the Mo-Kan Concrete Products Association, held on December 13, 1951, at Kansas City, Mo. The report of the nominating committee was accepted before the dinner.

During the festive meal Ben Asner, master of ceremonies, presented to George W. Goelitzer, retiring president, a ring emblematic of the concrete masonry industry. Mr. Goelitzer responded and introduced the newly-elected officers.

For the coming year the following will serve as officers: president, George W. Kulhavy, Carter - Waters Corporation; vice-president, L. L. Daugherty, Eternacrete Products, Inc.; secretary, Gus Main, Kansas City Concrete Pipe Company; treasurer, C. Ernest Swanson, Concrete Building Units Company.

In accepting his new duties, Mr. Kulhavy mentioned the plans under consideration for directing the attention of the public to the merits of concrete masonry. Committees will work out advertising and direct mail programs which will benefit the assocaition members and also the industry throughout the Missouri-Kansas area.

Knoxville, Ia., Concern Operating New R.M.C. Plant

One of the newest industries of Knoxville, Ia., is the plant of the Knoxville Ready-Mix Concrete Company, owned and operated by Jim Richey.

By means of its 100-ton aggregate bin and two 3-cu. yd. truck mixers the four-man crew can turn out 200 cu. yd. of concrete per day, delivered. Operations at the plant began on October 1, 1951.

Tentative Program Scheduled For 32nd N.C.M.A. Convention

The following tentative schedule of events has been released for the 32nd annual convention of the National Concrete Masonry Association, to be held at the Hotel New Yorker in New York City from February 18 to 20, 1952. Alterations may possibly occur before the opening of the sessions, involving substitutions in the list of speakers and/or the topics of addresses.

On *Monday, February 18*, the opening session will be held at 2 p.m. The following program has been outlined:

President's address, Horace Bush

Report of the treasurer, Carroll Strohm Jr.

Report of the director of engineering, R. E. Copeland

Report of the director of promotion, W. P. Markert

Report of the executive secretary, E. W. Dienhart

Election of directors

Reports from officers of local, state, and regional associations.

This business session will be followed by a get-together party in the Grand Ballroom.

The first meeting on *Tuesday, February 19*, will open at 10 a.m. and will feature the following speakers:

Symposium on *Methods of Drying Block and Covered Storage*, Jay Ehle, Cloyd Fellabaum, Ben Wilk, Al Streblow, and Fred Reinhold.

Preliminary Results of Tests of Reinforced Concrete Masonry Lintels, Professor H. E. Mayrose, University of Detroit.

Prestressing, E. M. Barnes, Knox Concrete Products, Knoxville, Tenn.

At 2 p.m. on Tuesday the following addresses will be heard:

Concrete Joints in Concrete Masonry Buildings, Robert S. Scott, consulting engineer, Alpena, Mich.

Design Details as a Factor in the Cracking of Concrete Masonry Walls, Luke Chaney, regional structural engineer, Portland Cement Association, Atlanta, Ga.

Installing and Operating a Modern High-Pressure Steam Curing System, Noel Harter, Harter Marblecrete Stone Company, Oklahoma City, Okla.

The annual N.C.M.A. banquet will be held Tuesday evening.

Sessions on *Wednesday, February 20*, will begin at 10 a.m. Four talks have been scheduled for this meeting:

Outlook on Availability of Portland Cement and Reinforced Steel in 1952, Delmar Runner, chief, Cement and Concrete Section, Building Materials Branch of Office of Price Stabilization

Workings of Price Stabilization and How They Affect Industry, Walter H. Acheson, chief, Building Material Branch of O.P.S.

Building for Tomorrow, Alfred P. Haake, economist and mayor of Park Ridge, Ill.

Sales Psychology in Merchandising, Dr. Frank Goodwin, University of Florida.

From 2 p.m. to 4 p.m. there will be aggregate meetings.

41 Ready-Mix Companies to Get N.R.M.C.A. Safety Awards

Presenting admirable safety records, 41 companies gained recognition for their achievements in the annual contest of the National Ready Mixed Association. In all, 157 companies submitted their reports to the association, showing a total production of 15,511,908 cu. yd. during the 12-month period ended June 30, 1951. The contest was divided into three classes: Class A—companies producing more than 100,000 cu. yd. during the contest period; Class B—companies producing 50,000 to 100,000 cu. yd.; and Class C—companies producing less than 50,000 cu. yd.

The winning company in the Class A group was the W. E. Anderson Sons Company of Columbus. O., which had no lost-time injuries to operating personnel, no injuries to non-employees, and only one property damage accident during the contest year. Ralph Anderson, president of the company, is an enthusiastic advocate of good safety programs. His company has achieved an enviable record, and has repeatedly won national and state honors in the safety field.

Seven companies entered in the Class B competition had perfect records. Following the policy established by the association's safety committee, the company with the greatest combined total of yards of concrete produced and man-hours worked receives the higher rating in the case of identical scores. Therefore, the Class B award goes to the Eugene Sand and Gravel Company, Eugene, Ore. Certificates of Achievement in Safety will be awarded to the six other companies establishing perfect records in the Class B competition. The following will receive the certificates in recognition of their accomplishments:

Livingston Rock and Gravel Company, Inc., Long Beach, Calif.

Central Supply Company, Watsonville, Calif.

West Texas Concrete Products, Inc., Odessa, Tex.

Acme Ready Mix Concrete Company, Rockford, Ill.

Whitney's, Duluth, Minn.

Eberts Brothers Company, Wyandotte, Mich.

The Eberts firm has had an accident-free record for two consecutive years.

Compiling the greatest combined total of yards of concrete produced and man-hours worked in Class C, the Standard Roofing and Material Company, Tulsa, Okla., will be awarded the trophy for this classification. The following companies entered in the Class C group also had perfect records, and will receive Certificates of Achievement in Safety:

Samuel Braen & Co., Mahwah, N. J.

*Blake Brothers Co., Richmond, Calif.

Tyler Ready-Mix Concrete Co., Tyler, Tex.

Newkirk Transit Mix, Inc., Joliet, Ill.

Builders' Concrete, Inc., Muncie, Ind.

Modahl and Scott, Inc., Bloomington, Illinois.

*Rock River Ready Mix, Dixon, Ill.

*American Aggregates Corp., Ready Mix Div., Greenville, O.

*Stephens Ready Mix Concrete Co., Cairo, Ill.

*Cement-Mix Concrete Co., Erie, Pa.

*Portland Sand & Gravel Co., Portland, Pa.

Pocahontas, Inc., Salisbury, Md.

*The Union Sand & Supply Corp., Painesville, O.

Wisconsin Valley Concrete Products Co., Wisconsin Rapids, Wis.

Grand Junction Building Materials Co., Inc., Grand Junction, Col.

Coon Certified Concrete, Luzerne, Pa.

Mesaba Construction Co., Hibbing, Minn.

*Nelsen Concrete Culvert Co., Inc., Mt. Vernon, Ill.

*Shamokin Ready Mixed Concrete Co., Inc., Shamokin, Pa.

*Mooney Bros, Supply Co., New Castle, Pa.

Helena Sand & Gravel Co., Helena, Mont.

Certified Red-D-Mix Concrete, Lawton, Okla.

*The Trumbower Co., Inc., Nazareth, Pa.

Maysville Ready-Mix Concrete Co., Maysville, Ky.

Ready Mix Concrete Co., Storm Lake, Ia.

Logan Concrete Products, Inc., Logan, W. Va.

*Gethmann Concrete & Material Co., Gladbrook, Ia.

Ready Mixed Concrete Co., Anandale, N. J.

*Monroe Ready-Mix Concrete & Material Co., Monroe, Wis.

Wiltgen Ready Mix Co., Le Mars, Ia.

*Watertown Cement Products Co., Watertown, S. D.

Worthington Ready Mix Concrete Co., Worthington, Minn.

Additional recognition should be given to the 14 companies who have stars before their names. Each of these companies has had an accident-free record for at least two consecutive years; the Trumbower Co. has maintained an accident-free record for four consecutive years and the Portland Sand & Gravel Co. has been accident-free for three consecutive years.

Trophies will be presented to the three winning companies by PIT AND QUARRY, and all production and distribution employees of the three winning firms will be awarded a Certificate of Accomplishment in Safety by the association. Presentation of awards will be made at the association's 22nd annual convention at the Conrad Hilton Hotel in Chicago on February 11.

Vincent P. Ahern, executive secretary of the association, declared that safety is good business for every industry, but especially for the ready-mixed plants as their operations involve the use of crowded streets and highways of the nation. He encourages every member company to participate in the safety contest next year. Unless the industry shows awareness of the importance of public relations and makes a maximum effort to reduce and then to eliminate accidents, it shall surely suffer through regulations which will make operations expensive or even impossible, Mr. Ahern stated. He said that member companies not now entered in the contest can cooperate by filling out an enrollment form which will be sent them next March, and then by submitting a report on the form which will be sent them next July, covering the period from July 1, 1951 to June 30, 1952.

Trophy to be awarded to W. E. Anderson Sons Co. by Pit and Quarry.

Wright Ready-Mix Co. Sold To Henry Nelch & Son Company

The sale of the Wright Lumber Company and Wright Ready-Mix Company, Jacksonville, Ill., to Henry Nelch and Son Company, Springfield, Ill., has been announced by Charles N. Wright, effective on January 1.

The transaction includes buildings and real estate of the Wright enterprises. The ready-mix concrete business became a subsidiary of the lumber company, founded in 1928, only a few years ago. The firm of Henry Nelch and Son is one of the pioneers in the industry.

American Concrete Pipe Association Attracts 115 to First Short Course

another ON THE SPOT report

FEATURING a tour of the Portland Cement Association laboratories at Skokie, Ill., the American Concrete Pipe Association held its first short course for producers on November 26-28 at the Edge-

By ROGER R. NOLAN

water Beach Hotel in Chicago. The well-rounded program, which was supervised by leading men of the industry and members of the association Staff, was attended by 115 producers and guests. Those present included representatives from British Columbia and Canada, as well as from all parts of the United States.

In addition to the P.C.A. tour, the three-day program was highlighted by many interesting talks and discussions, all contributing to the great success of the affair. In each case, the speaker led off with a prepared paper which was followed by a discussion; and all the discussion periods were so popular that they had to be terminated by the chairman to keep on schedule. Indications are that this school will become one of the most important association activities.

The sessions started Monday morning with the introduction of those in attendance. The welcoming address was made by E. H. Fox, secretary-treasurer of the Cincinnati Concrete Pipe Company, Reading, O. John G. Hendrickson, research engineer of the A.C.P.A., who directed the course, gave the introduction to the short course subjects. He stated that the purpose of the school was "to introduce a course correlating with the problems that would arise in the industry."

• E. H. Fox, Cincinnati Concrete Pipe Co., and H. F. Peckworth, managing director, A.C.P.A.

After the preliminary program Howard F. Peckworth, managing director of the A.C.P.A., spoke on the status of the industry. He also discussed specifications, tests, and committees, and jacking concrete pipe. Mr. Peckworth pointed out that there has been an absolutely phenomenal growth in the industry since the recent war. In 1950 production was over 9,000,000 tons, and in 1951 output is expected to reach a total of over 10,500,000 tons. He explained that the industry has made tremendous progress in the draintile and water pressure supply fields during the last few years.

Mr. Peckworth expressed his belief that the concrete used in concrete pipe is the finest made commercially anywhere in the world. The speaker gave a brief resume of the various manufacturing processes used in the industry, and informed the group of the reason for the school—to help producers make the best possible pipe. In discussing competition with clay, Mr. Peckworth stated that clay pipe has not made any noticeable increase in production over the last 20 years, and that concrete pipe is steadily pulling ahead of its rival.

Since the association's founding in 1907, Mr. Peckworth said, there has been a steady trend toward a product of higher quality in the industry. Regarding the future of the industry, he predicted tough competition from the clay and corrugated metal industries

In presenting his report on specifications, tests, and committees, Mr. Peckworth explained the duties and purposes of committee C-13 of the American Society for Testing Materials, and the procedure involved in acquiring membership. He stated that it takes a lot of hard work to change words or phrases in any specification. Nevertheless, he continued, specifications are in a constant state of flux and will be changed from time to time. The problem involved goes like this—specifications can tell how a company's pipe should measure up and the requirements the producer must meet, but they can't tell producers how to make the pipe to meet these requirements. In conclusion, Mr. Peckworth spoke briefly on jacking concrete pipe.

The Monday afternoon session featured a talk on the hydraulics of sewers and culverts by L. H. Kessler, professor of sanitary engineering, Northwestern University, Evanston, Ill.

Centrifugal pipe was the topic of discussion by J. A. Dunn, president of Hume Pipe of New England, Inc., Swampscott, Mass., who opened the Tuesday morning session. E. F. Bespalow of Choctaw, Inc., Memphis, Tenn., presided. Mr. Dunn, who showed a film of the Hume process, declared that the faster you spin

• C. A. Bluedorn, president, Zeidler Concrete Products Machinery Co., and Elmer Leuliette, New York regional engineer, Universal Concrete Pipe Co.

• V. R. Jeffries, Jeffries and Sons, Ltd., Calgary, Canada, and G. T. Cruise, B. C. Concrete Co., Ltd., Vancouver, B. C., Canada.

your mold, the greater the packing force applied to the concrete. He suggested a mix using about 42-45 percent sand for centrifugal pipe, and emphasized the use of a coarser sand to permit water to bleed out in the spinning process.

C. A. Bluedorn, president of Zeidler Concrete Products Machinery Company, Waterloo, Ia., spoke on packerhead pipe, giving an informative description of the process and its subsequent problems. He explained the limitations in the design of the mix, testing of packerhead pipe, and the importance of care in the adding of water to the mix. The speaker stated that the adding of water to the mix in the packerhead process presents a critical problem of limitations, as you can't get rid of the excess as in the case of the centrifugal process.

Walden Wren, chief engineer of the Universal Concrete Pipe Company, Columbus, O., gave a talk on cast pipe. He pointed out the earlier crude and inaccurate methods of making cast pipe, and told how today, with good equipment, low water-cement ratio, proper vibration, and proper curing, high-quality pipe is being made of first-class concrete. The speaker stated that the cast process particularly lends itself to long lengths, specials, large diameters of pipe such as 120-in., large bell-end pipe, and odd lengths. He also discussed the design of the mix and the reinforcing of concrete pipe. Slides were shown in connection with the talks.

Emphasizing the importance of using a sharp, hard sand, plenty of gravel, and as much water as the mix will stand, Elmer Leuliette, Universal Concrete Pipe Company, New York, N. Y., discussed tamped pipe. He stated that pipe is difficult to tamp if the mix is loaded with sand. He declared that sand only acts as a medium between gravel and cement, and that the sharper and harder the sand, the better and stronger the pipe. He also stressed the idea of letting the mixer run dry for a few minutes to allow the cement, sand, and gravel to become throughly agitated and blended.

• C. J. Powers, C. T. Bailey, and F. A Trautner, chief engineer, all of New England Concrete Pipe Corp., Newton Upper Falls, Mass.; R. M. LaDue, president, Concrete Pipe Machinery Co., Sioux City, Ia.; and J. H. Ritcey, New England Concrete Pipe Corp.

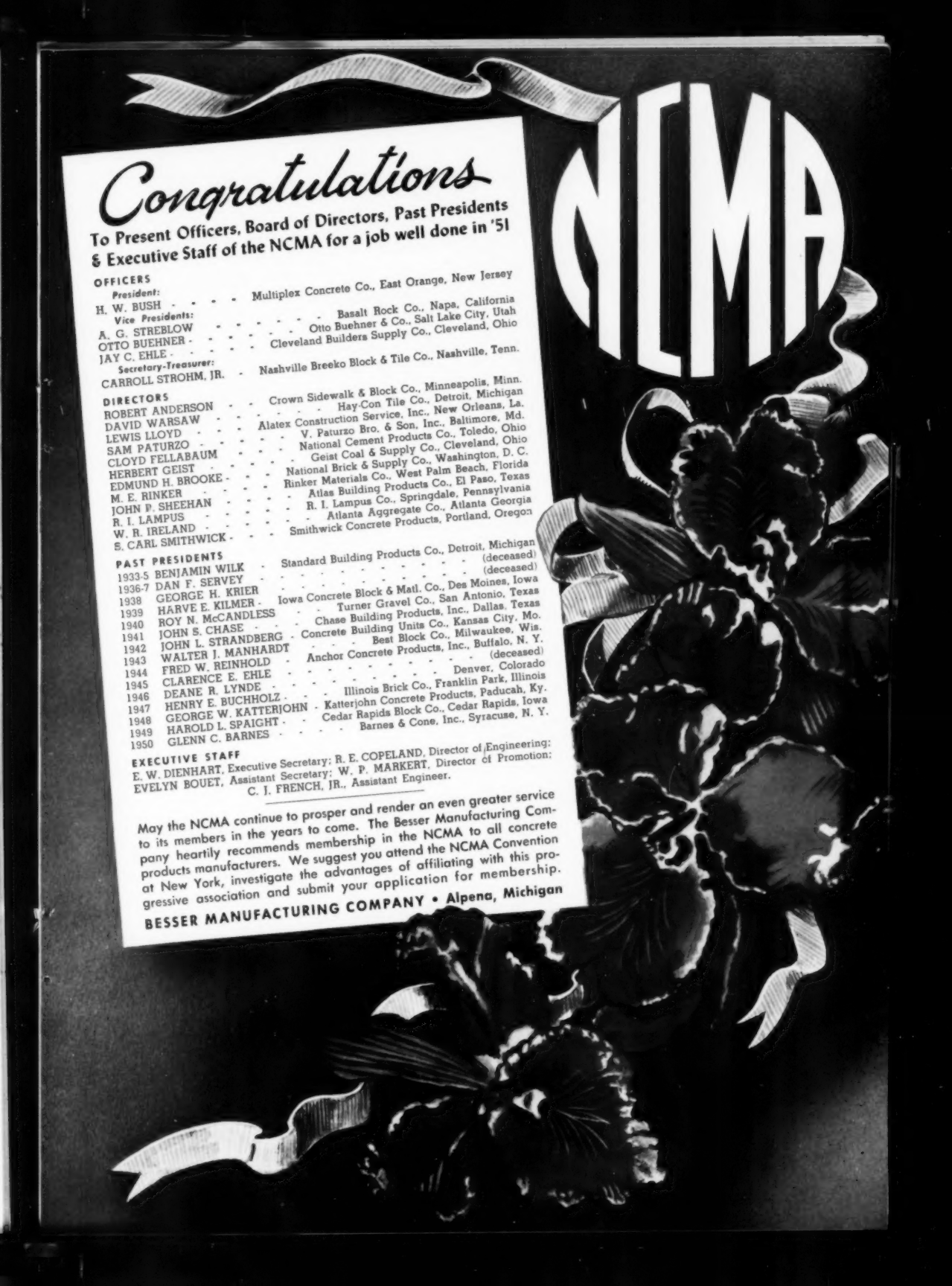
At the afternoon session the following talks were heard: *Loads on Concrete Pipe Conduits* by Professor M. G. Spangler, Iowa State College, Ames, Ia.; *Bedding and Backfilling* by Professor Spangler; and *Special Designs* by John G. Hendrickson.

On Wednesday morning the "students" were taken by bus to Skokie, Ill., for the tour through the Portland Cement Association laboratories, and to hear talks by technical men employed at the laboratories. Competent guides directed the visitors, who were divided into groups, through the building to view the various laboratories and processing rooms. The guides explained the operations of the intricate mechanisms and testing devices. The soil processing room, the aggregate storage and processing room, the high- and low-temperature concrete laboratories, the analytical and physical chemistry laboratories, and the controlled atmosphere room were among the many parts of the building visited by the "students".

Following the tour the visitors assembled in the lunch room to hear talks concerning projects currently being conducted by the P.C.A., and principles of concrete making and curing. I. L. Tyler, manager field research section, P.C.A. laboratories, spoke on long-time studies. Mr. Tyler explained the association's project at Naperville, Ill., which has been studied for 11 years. The purpose of the study, he stated, was to observe the performance of cement in concrete. Separate blocks, each containing one of the five types of

• S. A. Morsbach, U. S. Concrete Pipe Co.; Bill Knierim and Mark Osweiler, both of Price Brothers Co.

• J. G. Hendrickson, research engineer, A.C.P.A.; I. L. Tyler, manager, field research section, and T. C. Powers, manager, basic research section, P.C.A. Laboratories.



Congratulations

To Present Officers, Board of Directors, Past Presidents & Executive Staff of the NCMA for a job well done in '51

OFFICERS

President:
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May the NCMA continue to prosper and render an even greater service to its members in the years to come. The Besser Manufacturing Company heartily recommends membership in the NCMA to all concrete products manufacturers. We suggest you attend the NCMA Convention at New York, investigate the advantages of affiliating with this progressive association and submit your application for membership.

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Variations in Apparent Specific Gravity

By L. BOYD MERCER, M.C.E.

Chief Engineer

Ready Mixed Concrete, Ltd. and Associated Companies

another P-Q exclusive

DETERMINATION of the specific gravity of the particles constituting a concrete aggregate is desirable for complete understanding of the behavior of the material and is necessary for weigh-batching and yield calculations. An examination of the influence upon such determinations of air which is entrained or entrapped by the particles presents an important characteristic which is frequently overlooked.

Investigation Weight of unit volumes of the various size groupings was determined by numerous weighings in a ½-cu. ft. cylindrical container. Voids and entrained air were estimated with the aid of displacement and apparent specific gravity tests.

The aggregate was dolerite of Mesozoic age, a hard, tough, and dense material as will be appreciated from the analysis presented in Table I.

Table I—Chemical Constitution of Aggregates

Mineral	Chemical Composition	Percentage	Specific Gravity	Weighted S. G.
Quartz	SiO_2	6.3%	2.66	.167
Orthoclase	$K_2O \cdot Al_2O_3 \cdot 6SiO_2$	3.7	2.57	.095
Albite	$Na_2O \cdot Al_2O_3 \cdot 6SiO_2$	9.3	2.62	.244
Amorthite	$CaO \cdot Al_2O_3 \cdot 2SiO_2$	32.2	2.75	.886
Diopside	$CaO \cdot MgO \cdot 2SiO_2$	18.2	3.2	.583
Hypersthene	$(Mg, Fe)O \cdot SiO_2$	27.3	3.4	.929
Apatite	$3(3CaO \cdot P_2O_5) CaF_2 (Cl_2)$	1.0	3.2	.032
Magnetite	$FeO \cdot Fe_2O_3$	0.25	5.1	.013
Ilmenite	$FeO \cdot TiO_2$	1.1	4.7	.052
Pyrite	FeS_2	0.08	5.0	.004
Gypsum	$CaSO_4 \cdot 2H_2O$	0.15	2.3	.003
		99.58		3.008

1½- to ¾-in.: The average of numerous specific gravity determinations by the pycnometer method was 3.006, and the average of several tests by the void determination method was 2.986, so that the adopted specific gravity was 3.00, which agrees closely with the determination by mineral constituents. Absorption was found to be negligible for all practical purposes. The average weight of several determinations of the dry rodded stone was 99.5 lb. per cu. ft., representing 46.5 percent voids and 0.4 percent entrained air adhering to the particles of stone.

¾- to ⅜-in.: The average dry rodded weight of this size-group was 95.3 lb. per cu. ft., representing 48.5 percent voids and approximately 0.6 percent entrained air adhering to the particles.

Because of the considerable interest which our readers have expressed in L. Boyd Mercer's "Law of Grading for Concrete Aggregates", which this publication reviewed in its September, 1951, issue (page 94), we have arranged with Mr. Mercer to publish a series of technical papers in which he discusses some of the secondary fields of invesigation involved in the development of his theories. Others in the series of 12 papers which Mr. Mercer has written will be published in future issues, some appearing in the main section of PIT AND QUARRY, and some in the CONCRETE MANUFACTURER.

⅜-in. to 4-mesh: The average dry rodded weight of this size-group was 91.5 per cu. ft., representing 50.2 percent voids and approximately 1.0 percent entrained air adhering to particles.

4- to 8-mesh: The average dry rodded weight of this size-group was 89.3 lb. per cu. ft., representing 51.2 percent voids and approximately 1.2 percent entrained air adhering to particles.

8- to 16-mesh: The average dry rodded weight of this size-group was 89.5 lb. per cu. ft., representing 50.6 percent voids and approximately 1.6 percent entrained air adhering to particles.

16- to 30-mesh: The average dry rodded weight of this size-group was 89.8 lb. per cu. ft., representing 50.1 percent voids and approximately 2.0 percent entrained air.

30- to 50-mesh: The average dry rodded weight of this size-group was 89.8 lb. per cu. ft., representing 49.8 percent voids and approximately 2.3 percent entrained air.

50- to 100-mesh: The average dry rodded weight of this size-group was 95.5 lb. per cu. ft., representing 45.8 percent voids and approximately 3.2 percent entrained air.

—100-mesh: The average dry rodded weight of this size-group was 93.5 lb. per cu. ft., representing 46.2 percent voids and approximately 3.9 percent entrained air, or double that of cement.

The above characteristics are summarized in Table II.

Table II—Percentages of Entrained Air for Size-Groups

Size Groups	Variation in Apparent Specific Gravity	Air Entrained by Particles
1½-¾	2.986	.4
¾-⅜	2.982	.6
⅜-4	2.970	1.0
4-8	2.964	1.2
8-16	2.952	1.6
16-30	2.940	2.0
30-50	2.931	2.3
50-100	2.904	3.2
-100	2.883	3.9

Conclusion Specific gravity tests with a pycnometer can be expected to present lower "apparent" specific gravity for fine particles than for coarse particles. This is regarded as being due to the increased quantity of air entrainment with the finer particles in spite of rolling and vibratory methods for displacement. The quantity of air entrained in this manner can be as high as 4 percent for fine flaky particles, and it is thus important to adopt the lower "apparent" specific gravity figure when determining quantity of air otherwise entrained.

Public Invited to Visit Plant Of Kankakee Block Co., Inc.

Saturday, October 27, was an important day in Kankakee, Ill., for it marked the opening of the new plant of the Kankakee Block Company, Inc., makers of concrete and lightweight block and concrete brick.

A guided tour of the plant was a feature of the open house. Visitors were shown the three-compartment storage tank having a capacity of eight carloads. In the three sections cement, sand, and gravel—ingredients of the concrete—are stored, to be measured in the 50-cu. ft. weigh batcher below and chuted to the mixer.

Hydraulic lift trucks carry racks of blocks into the kilns (there are seven of these) for steam curing. The combined capacity of the kilns is about 10,000 units.

Survey Indicates Block Output Set New Record of 1,650,000,000 Units in 1951

Industry topped peak set in 1950 by at least 250,000,000 units

By WILLIAM M. AVERY

ACCORDING to information supplied by representative producers throughout the United States, the concrete block industry chalked up a new and imposing all-time record for production in 1951. Output of concrete masonry units probably totaled approximately 1,650,000,000 8-in. equivalents, an increase of 250,000,000 units, or about 18 percent, over the 1,400,000,000 units which the industry produced in 1950.

These conclusions are based upon returns from one of the most comprehensive production surveys which this publication has ever conducted. Over 14 percent of the industry's total capacity, or approximately 235,000,000 units of production, was represented. In order to obtain a firm base for the projection of the sample over the entire industry, producers were requested to supply production data not only for 1951, but for 1947, when all components of the industry reported output to the Bureau of the Census. The 14.3 percent sample obtained in THE CONCRETE MANUFACTURER'S survey showed total production of 141,202,000 units in 1947, and approximately 233,900,000 units in 1951, an actual increase of 65 percent in the four-year period. However, since the returns covered new capacity that was not in existence in 1947, but could take no account of producers who had gone out of business during the intervening years, the indicated percentage increase was arbitrarily reduced 7 points to arrive at a net increase of 58 percent. The resulting factor of 1.58 was applied to the 1,042,023,000 units of production which the Bureau of the Census reported for 1947 in order to project the sample over the entire block industry.

On an area basis the projected returns indicate that the Midwest led in 1951 production as it also did in the 1947 census report, with 587,000,000 units. The South was next with 468,000,000 units, followed by 416,000,000 units in the East and 179,000,000 units in the West. The largest increase in production during the four-year period occurred in the South, which showed an 83 percent jump. Production in the West was up 65 percent, in the Midwest 58 percent, and in the East only 36 percent.

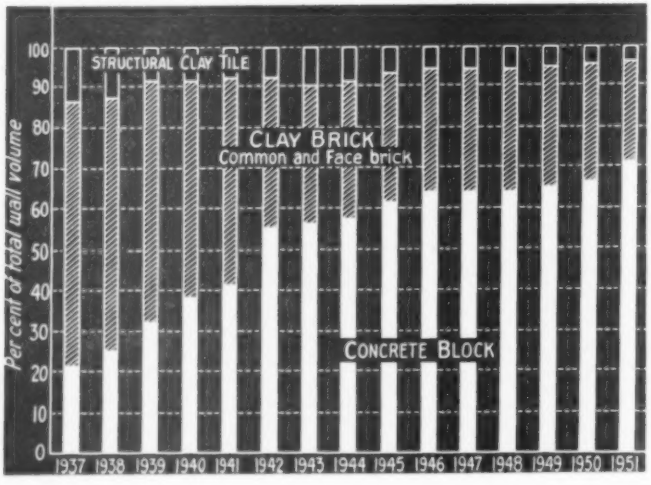
Concrete masonry units in 1951 accounted for a higher percentage of total wall volume than in any year in history. Based on estimated production, block accounted for 71 percent of the total wall volume constructed during the year (see chart), as compared with 26 percent for clay brick (common and face), and 3 percent for structural clay tile. In 1950 block comprised 67 percent of the total, clay brick 29 percent, and structural clay tile 4 percent.

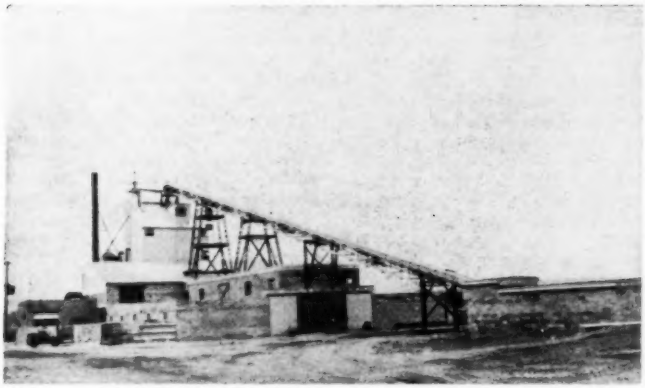
Lightweight Units Lightweight masonry units, which accounted for approximately 45 percent of total production in 1947, showed only a relatively modest gain in the projected figures for 1951. Of the total output of 1,650,000,000 units, 866,500,000 units, or approximately 52 percent, consisted of lightweight block. The proportion of lightweight units was highest in the East (59 percent), and lowest in the Midwest (45 percent), while the returns from both the South and West showed about 55 percent of output as being in the lightweight category.

Of far greater significance, however, is the fact that lightweight units on a numerical basis scored a whopping 85 percent increase during the four-year period from 1947 to 1951. Although lightweight materials are still in short supply in some sections of the country, the worst production bottlenecks have been broken. Transportation costs in 1951 were unquestionably a more serious factor in limiting the output of lightweight masonry units than the availability of the materials themselves. One prominent manufacturer of lightweight aggregates reports that in moving his material 300 miles by rail, transportation costs equal the f.o.b. cost at the source.

In this connection a fair number of our informants took the trouble to point out that they would have produced more lightweight units if materials had been available. A similar survey conducted by this publication a year ago indicated that 48 percent of the industry's total output in 1950 consisted of lightweight units, suggesting that a gain of about 4 percentage points was experienced last year.

• Relative annual consumption from 1937 through 1951 of the three major masonry materials, expressed in percent of estimated total wall volume.





• Among the notable new plants completed in 1951 was the Standard Building Material Company's combined ready-mixed-concrete and concrete-masonry-unit plant at South St. Paul, Minn. The long inclined conveyor feeds separate storage systems for the two operations.

Hourly Capacity The reporting group of block plants showed an increase of 9 percent in average hourly productive capacity —from 856 units per hour on January 1 to 934 units per hour on November 1, a jump of 78 units per hour per plant. The increase was fairly uniform in all sections of the country; producers in the West showed a jump of 14 percent to 780 units per hour; in both the Midwest and the South there was an increase of about 9 percent, to 923 and 1,100 units per hour respectively; and the average among Eastern producers increased 7 percent to 958 units per hour. These average hourly rates are probably more indicative of the caliber of the plants covered by the survey returns than they are of the industry's actual average plant capacity. The upward trend which we have noted each year since survey questionnaires were first sent out seems to confirm the general observation that very small plants either expand rather quickly into relatively large ones, or fade from the scene within a few years.

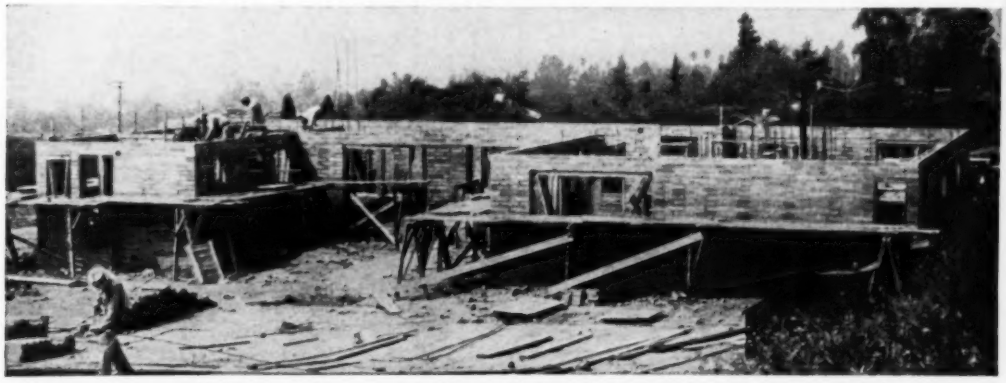
The indicated 9 percent increase in hourly capacity seems reasonable in view of the fact that total output for the year increased about 18 percent over 1950. Obviously, and quite logically, some part of the year's increased output resulted from longer hours of operation. This publication's production survey of a year ago indicated that plants in the industry operated an average of about 2,000 hours in 1950. Comparable data for 1951 show approximately 2,300 hours of operation per plant, an increase of 15 percent. On an area basis, the 1951 average hours of operation per plant ran 1,610 in the West, 2,120 in the Midwest, 2,430 in the East, and 3,100 in the South.

Prices The effectiveness of price ceilings is evident in the survey findings regarding the average f.o.b. selling price of 8- by 8- by 16-in. masonry units. The average for all of the companies that supplied information increased from 19 cents on January 1 to 19.1 cents on November 1. During that period the average selling price in the Midwest increased from 18.6 cents to 18.7 cents per unit, in the West from 21.6 cents to 21.7 cents per unit, in the East from 18.7 cents to 18.9 cents per unit, while in the South the average remained unchanged at 19.0 cents per unit.

Wages Hourly wages in the block industry continued their upward spiral in 1951. Average wages for all the plants which submitted data increased from $1.21 on January 1 to $1.28 on November 1. Among the Midwestern group the average increased 8 cents per hour to $1.40, in the West 9 cents per hour to $1.44, in the South 5 cents per hour to $0.94, and in the East 7 cents per hour to $1.32.

Outlook Just a year ago it seemed likely that block production was due for a modest decline. Both the dollar volume and the physical volume of housing construction reached in 1950 the highest levels ever recorded. Credit restrictions, material shortages, and soaring costs seemed certain to effect a sharp reduction in expenditures during 1951. Private residential construction, one of the block industry's most important markets, was expected to drop about 50 percent below the 1950 level.

Despite this somewhat grim outlook, our survey of a year ago showed that block producers were for the most part quite optimistic about their prospects in 1951. Half of the companies which supplied data predicted that their output would increase, and only 20 percent



• The concrete masonry publicity stunt of the year was scored by the Concrete Masonry Manufacturers Association of Southern California, which sponsored a 26-week series of television broadcasts covering the construction progress of this California Modern concrete masonry home.

of the replies expressed fear of cutbacks. Events, of course, have proved that the optimists were right.

Instead of dropping approximately 15 percent as predicted, the dollar volume of new construction increased about 8 percent to set a new record of $30,000,000,000. Again, as in 1950, housing provided the largest single market for construction materials, non-farm and farm housing and related structures accounting for 36 percent of all construction expenditures during the year. Housing expenditures were actually down only 14 percent below the record level set in 1950, although the loss in physical volume was somewhat greater due to increased costs. Preliminary estimates indicate that perhaps 1,150,000 dwelling units were constructed during the year, as compared with 1,400,000 units built in 1950.

Housing expenditures showed an appreciable drop in the second half of the year, indicating that tightening credit and other restrictive factors were at last exerting the braking effect which had been expected earlier in the year. The September level was 33 percent below the same month in 1950, October was 45 percent less, and November was 19 percent lower. This slowdown, it is expected, will be apparent throughout the first half of 1952, with the result that expenditures for the year may be as much as 15 or 16 percent below the level for 1951. It is believed that by midyear material controls and credit restrictions may ease sufficiently to reverse the trend during the last half of the year.

The high level of block production throughout 1951 is at least in part a result of important gains in two categories of construction in which the block industry is exceptionally strong. Industrial building soared almost 94 percent during the year to a total volume of $1,900,000,000, and commercial building, which reached a total of $1,300,000,000, was 8 percent over the 1950 level.

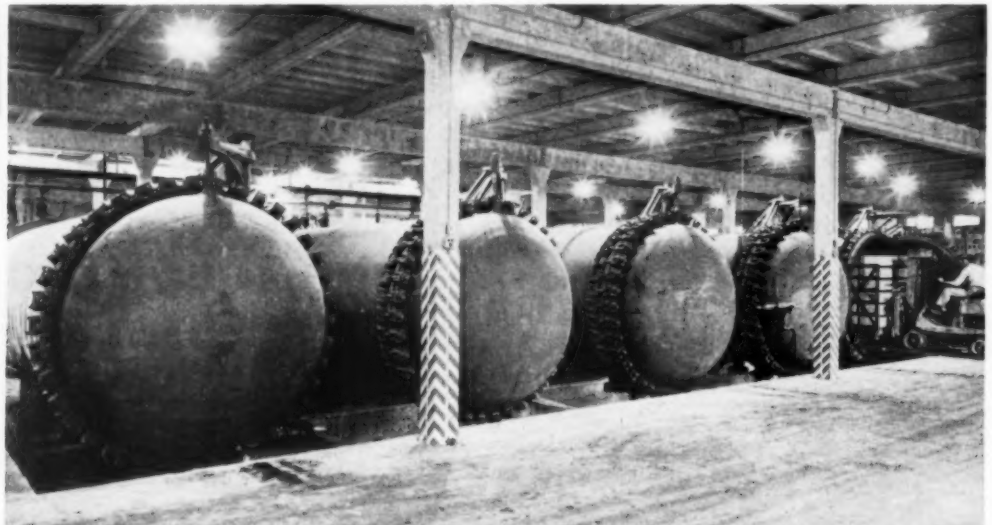
Block producers themselves expect their volume of business to show a modest increase in 1952. Forty-two percent of our informants indicated that their volume of business would be up, and an equal proportion predicted that the demand for their product would be at least as good as it was in 1951. The remaining 16 percent anticipate downward adjustments ranging from as little as 5 percent to as much as 25 percent. Forecasts of increased business averaged a little over 21 percent, while those on the downward side averaged about 17 percent. When these are weighed and combined with the returns that indicated no change in outlook, the predicted net increase for all producers works out at approximately 6 percent.

The industry's appraisal of its prospects in the new year was surprisingly uniform in all sections of the country. Midwestern producers forecast a net rise of about 4 percent, and those in the East, South and West predicted increases of 7, 8 and 9 percent respectively.

The questionnaire also asked block makers to indicate whether or not they planned to increase plant capacity in 1952. Thirty-five percent of all the replies were in the affirmative. Well over half of the replies from producers in the South indicated definite plans for expanding capacity, while in the Midwest, West, and East the showing was 33, 20, and 18 percent in that order.

Markets The block industry's record-breaking production last year went into almost every conceivable type of construction. The decline in private residential construction was more than offset by substantial increases in public housing, private industrial, and institutional construction, and there is no doubt whatever that concrete masonry made gains in virtually every type of construction for which it is suitable.

The floor market was certainly a factor in the 250,000,000-unit increase which the industry scored last year. With blocks already accounting for approximately 70 percent of total wall volume, many producers believe that future gains can only be realized by wider and more vigorous exploitation of the floor filler market. This publication's survey of 1951 production made no



• The curing problem received its share of attention in 1951. A noteworthy installation was this battery of 5 high-pressure steam autoclaves at the Harter Marblecrete plant in Oklahoma City.

effort to determine the proportion of total output which went into floor construction, but it may well have been as high as 11 or 12 percent, a truly remarkable showing in view of the fact that many producers are still making no effort to develop the market.

There was some activity during the year in the use of machine-made concrete units for prestressed structures. While this field did not account for any significant share of the year's output, it nevertheless gave promise of some day assuming major importance. The method shows excellent cost advantages in comparison with monolithic concrete construction, the savings amounting in some instances to as much as 50 percent.

Cement Shortage Since cement shortages became an almost annual phenomenon several years ago, our survey questionnaires have asked for information regarding the amount of production lost in consequence of reduced operations due to lack of cement. The question is a tricky one, since there is always a chance that a fair portion of the replies will be emotional rather than factual. It is also difficult to develop an accurate picture because some portion of the apparent production loss is usually made up before the end of the year.

The information which producers supplied indicates that production was affected to only a very minor extent in 1951. Only 30 percent of the companies which replied to our recent questionnaire reported that the cement shortage was a factor in their 1951 operations, whereas a year ago almost half the replies indicated some distress. Lost production amounted to 2.4 percent in 1951, compared with a 5.4 percent reported loss for 1950.

Midwestern producers appear to have been hit the hardest by the cement shortage. Thirty-nine percent of the plants for which data are available lost some production during the year, but the net effect was a loss of only about 4 percent in the total output of the area. Plants in the South were affected in about the same ratio, but the indicated loss was only about 2.5 percent in total production. The loss among Western producers amounted to about 1.5 percent, and the Eastern group showed only a fraction of one percent.

If the survey finding represents a fairly accurate picture of the block industry's experience last year, it appears that not more than 40,000,000 additional units would have been turned out had there been no cement shortage at all. This can hardly be regarded as a serious, or even a significant, loss. There is evidence, however, that a considerable number of producers kept their machines operating during the summer months by making out-of-area purchases of cement. The extent of this practice and its effect upon production costs is almost impossible to gauge, but in 1951 it unquestionably represented one of the most serious aspects of the cement shortage. Late in the year there was talk of making application to the Office of Price Stabilization for adjustments to ceiling prices to cover the resulting increased cost of portland cement.

Cement Production Both production and shipments of portland cement reached new highs in 1951. Official figures through October show production 10 percent greater and shipments 8 percent greater than for the first 10 months of 1950. Production for the entire year must have approximated close to 245,000,000 bbl., or about 8 percent more than the 226,000,000 bbl. produced in 1950; and total shipments in all probability amounted to about 244,000,000 bbl., or 7 percent more than the 227,788,000 bbl. shipped in 1950.

A considerable portion of the cement industry's increased output in 1951 was the result of new capacity. Three new plants were placed in operation during the year, and major expansion and improvement programs were completed in at least 20 existing plants. Minor additions were also made to a considerable number of plants. In all, it appears that the industry completed the installation of 13 new rotary kilns during the year. These additions, in combination with increased productivity resulting from improved instrumentation and general increased efficiency, in all probability added at least 37,000 bbl. daily, or close to 12,000,000 bbl. annually, to the industry's capacity.

Work now in progress promises even greater increases in cement capacity during 1952. Two entirely new plants (the Lone Star Cement Corp., Sweetwater, Tex., and the Lehigh Portland Cement Co., Flagler Beach, Fla.) are scheduled for completion during the year, and two other companies (Alpha Portland Cement Co. at Jamesville, N. Y., and Carolina Giant Portland Cement Co. at Harleyville, S. C.) will complete sizable expansion programs which are described as being equivalent to new plants. A large share of this additional capacity is fortunately located in areas which have been most seriously affected by cement shortages in recent years. The four plants referred to are expected to have a combined capacity of 12,700 bbl. daily, or 4,100,000 bbl. annually.

Some 25 plants have major expansion programs and improvement work in progress, and it is certain that a large share of the resulting new capacity will be available before the close of 1952. Such programs are expected to add some 34,700 bbl. daily, or 11,000,000 annually, to the industry's total capacity.

A.C.P.I. Short Course

(*From page* 244)

cement represented, were observed for the 11-year span to determine their resistance to freezing and thawing. Results of the investigation seem to indicate that for freezing and thawing resistance purposes, air entrainment is more important than composition. However, in the case of sulphate-resistant cement, composition is more important.

Consideration of the consistency of the paste material (water-cement ratio) which embodies the aggregate was the theme of the talk by T. C. Powers, manager, basic research section, P.C.A. laboratories. Mr. Powers explained that the strength of the concrete depends upon the degree to which the paste is distributed throughout the aggregate. There must also be just enough plasticity in the mix to form the pipe or block solid throughout.

Completing the program at the laboratories, Hubert Woods, director of research, spoke on the basic principles of curing. He stated that the purpose of curing is to promote the hydration of the cement to give the concrete strength. He stressed the importance of having a relative humidity of above 85 degrees for the best curing condition.

The hydrogen sulphide problem was taken up following the luncheon at the Edgewater. E. F. Bespalow and Professor Kessler gave the talks.

The executive committee of the American Association of State Highway Officials met in the Edgewater Beach Hotel at the same time as the school, with highway directors from every state in the union. The technical problems committee of the A.C.P.A. also met there on Tuesday evening. Matters reviewed were the new *Hydraulic Handbook* now being prepared, activities of committee C-13 of the American Society for Testing Materials, and the research program and progress being made on the theoretical design of concrete pipe.

Producers Report Ready-Mix Industry Turned Out 36,000,000 Cu. Yd.

Output gained 15% or almost 5,000,000 yd. to set new record

BASED on information compiled from a comprehensive survey conducted by this publication during the closing weeks of 1951, the production of ready-mixed concrete last year set a new record of approximately 36,000,000 cu. yd.,

By WILLIAM M. AVERY

continuing the steady climb which started shortly after the end of World War II. Production statistics supplied by producers whose 1950 output totaled over 6,738,000 cu. yd. (about 22 percent of the industry) actually showed an 18½ percent increase in production for the first ten months of the year. It is believed, however, that the early onset of heavy winter in many sections of the country resulted in a sharp curtailment of activity, and that the net gain for the entire year was probably not in excess of 15 percent .

Midwestern producers, who accounted for about 31 percent of the yardage covered by the survey, showed a production increase of almost 30 percent for the first ten months of the year. Indicated increases in the East, South, and West amounted to 12, 10, and 8 percent respectively.

Cement Consumption Based on the average use of five sacks of Portland cement to a cubic yard of concrete, the ready-mix industry consumed approximately 45,000,000 bbl. of cement in the year just closed—roughly 18½ percent of the estimated 244,000,000 bbl. shipped by the cement industry in 1951. Comparable figures for 1950 show that ready-mixed-concrete producers consumed just over 38,900,000 bbl. of cement, or a little over 17 percent of total shipments in that year. In 1949 ready-mixed concrete accounted for 33,000,000 bbl., or about 16 percent of total shipments. This steady gain unquestionably reflects the growing popularity of plant- or transit-mixed concrete in preference to job-mixed materials. In 1951, as for the past several years, the ready-mixed industry was by a considerable margin the largest single user of portland cement.

According to the best evidence now available, the cement industry increased total shipments in 1951 by 16,200,000 bbl. over 1950. Of this amount, about 6,100,000 bbl. or 37½ percent, went to producers of ready-mixed concrete, a clear indication that the cement industry endeavored to take care of its No. 1 customers. Notwithstanding this, during the summer months there was some distress due to shortages of portland cement. This subject was covered in our production survey, and will be discussed below in detail.

New plants, such as this fine 1,000-cu. yd. per day installation of Wamix, Inc., at Dallas, Tex., undoubtedly accounted for a generous share of 1951's production increase.

Truck Fleets In order to gauge the ready-mixed-concrete industry's growth in respect to capacity, producers were asked to indicate the number and capacity of trucks in service on January 1 and November 1, 1951. The reporting group had 2,084 trucks in service at the start of the year, as compared with 2,310 in service ten months later, and total capacity increased 8½ percent during this period—from 7,834 cu. yd. to 9,129 cu. yd. The average number of trucks per plant increased from 16 units to 17½ units per plant. while average total capacity jumped from 59 to 69 cu. yd. per plant. Capacity per truck for the entire group also increased—from 3.75 to 3.95 cu. yd.

Producers in the Midwest reported an average of 13 trucks per plant on January 1, compared with 17, 18 and 19 units per plant in the South, East, and West respectively. Ten months later the averages had increased to 15 units per plant in the Midwest, 19 in the South, 20 in the East, and 21 in the West. Total truck capacity per plant increased

from 43 to 54 cu. yd. in the Midwest, from 63 to 72 cu. yd. in the South, from 72 to 86 cu. yd. in the East, and from 83 to 91 cu. yd. in the West. Average capacity per truck rose from 3.26 to 3.62 cu. yd. in the Midwest, from 3.64 to 3.80 cu. yd. in the South, from 4.25 to 4.30 cu. yd. in the West, and from 4.00 to 4.40 cu. yd. in the East.

Price Selling The average selling price of ready-mixed concrete, according to the survey tabulation, increased about 10 cents per cu. yd. (less than 1 percent) during the first 10 months of 1951—from $11.70 per cu. yd. on January 1 to $11.80 per cu. yd. on November 1. On an area basis increases effected during the 10-month period ranged from a low of 5 cents per cu. yd. in the East to a high of 19 cents per cu. yd. in the West. In the Midwest increases averaged 11 cents per cu. yd., while the average step-up in the South amounted to 16 cents per cu. yd. It is believed that in practically all instances the modest increases were based upon cost rise resulting from the use of out-of-area cement.

There was surprisingly little spread shown in average selling prices in various sections of the country. The average on November 1 for the Midwest was $11.61 per cu. yd., $11.74 for the East, $11.81 for the West, and $12.28 for the South.

Wages Wages also showed a modest increase for the 10-month period, the average of all returns advancing from $1.41 per hour at the beginning of the year to $1.47 per hour on November 1. On an area basis the largest increase showed up among Western producers, the average advancing from $1.67 to $1.75 per hour. In the South the increase averaged 7 cents per hour—from $1.10 on January 1 to $1.17 on November 1. Both Eastern and Midwestern producers showed an average increase of 5 cents per hour during the year—from $1.41 to $1.46, and from $1.44 to $1.49 respectively.

Cement Supply We asked producers to indicate on the questionnaires whether or not they lost production during the first 10 months of 1951 due to the cement shortage, and to estimate in cubic yards the amount of production lost. Just over 40 percent of all replies were in the affirmative, and the losses indicated amounted to about 3¼ percent of actual production for the 10-month period. In a similar survey conducted by this publication just a year ago 60 percent of all replies were affirmative, and the total estimated production loss amounted to about 7½ percent of actual production.

Another comparatively recent addition to productive capacity is the 400-cu. yd. per day plant of G. & W. H. Corson, Inc., Plymouth Meeting, Pa.

Thus our recent survey appears to offer fairly definite evidence that the ready-mix industry's situation with respect to cement supply improved last year in comparison with the year before. The same trend shows up in similar surveys of producers of concrete masonry units, almost half the replies indicating lost production in 1950, compared with only 30 percent in 1951. The block industry sustained an apparent 5.4 percent production loss in 1950, compared with only 2.4 percent last year.

The effect of the cement shortage upon ready-mix producers was far from uniform in various sections of the country. Apparently the greatest distress was experienced in the Middle West. Over 50 percent of the questionnaires received from this area showed some loss of production during the year. The total losses amounted to 7½ percent of total production for the entire group. Replies from the South showed an even split between sufferers and non-sufferers, and the apparent production loss amounted to 4.9 percent of production. Only 18 percent of our informants in the East felt that the cement shortage had any measurable effect on output, and the losses amounted to only 1.4 percent of production. Losses among Western producers represented less than 1 percent of the total production covered.

Based on the industry's apparent total production of approximately 36,000,000 cu. yd. last year, the 3¼ percent loss represents about 1,170,000 cu. yd. of concrete. The actual loss was in all probability less than this, since obviously some of the reported losses must simply represent a shifting of orders from one producer to another.

Cement Outlook It is estimated that in 1951 the cement industry added at least 37,000 bbl. daily, or 12,000,000 bbl. annually, to its total capacity. Although not all of this new capacity was available throughout the entire year, it was certainly a factor in the 16,200,000 bbl. by which 1951 shipments exceeded shipments in 1950.

Work now in progress promises even greater increases in cement capacity during 1952. Two entirely new plants (the Lone Star Cement Corp., Sweetwater, Tex., and the Lehigh Portland Cement Co., Flagler Beach, Fla.) are scheduled for completion during the year, and two other companies (Alpha Portland Cement Co. at Jamesville, N. Y., and Carolina Giant Portland Cement Co. at Harleyville, S. C.) will

(*Continued on page* 259)

Output of Concrete Pipe Soared To Over 10,000,000 Tons in 1951

Industry Set Record Tonnage For Fifth Consecutive Year

THE production of concrete pipe appears at this writing to have soared to a new all-time peak of over 10,000,000 tons in the year just closed. The industry's 1951 performance probably represents the largest tonnage increase, as well as the largest total tonnage, of any year in history, and it marks the fifth consecutive year in which production has soared to new high levels.

By WILLIAM M. AVERY

Although firm production statistics are not yet available, there is every indication that 1951 output was 13 or 14 percent above the 9,025,000 tons of all sizes and types of concrete pipe produced in 1950. An increase of this magnitude was strongly indicated by the industry's consumption of reinforcing steel during the year.

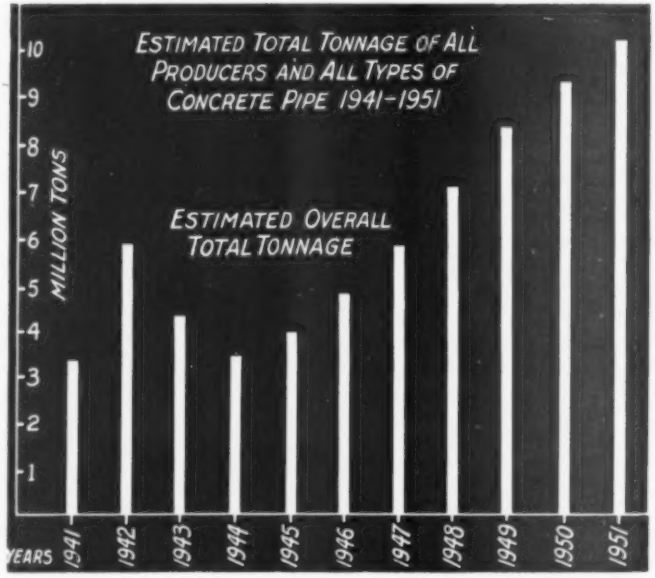
With the possible exception of culvert pipe, all types of concrete pipe seem to have been in heavier demand in 1951. Airport drainage work showed a sizable increase as a result of widespread activity in the lengthening of landing runways, and there was a further, and wholly unexpected, increase in the use of concrete pipe for farm drainage. Large irrigation districts in the West and Southwest took huge quantities of the industry's products, and the tonnage pressure pipe soared perhaps as much as 50 percent over 1950, just by virtue of a series of contracts in connection with atomic energy projects. Sewer and drinking water supply projects also accounted for an important share of the year's total gain.

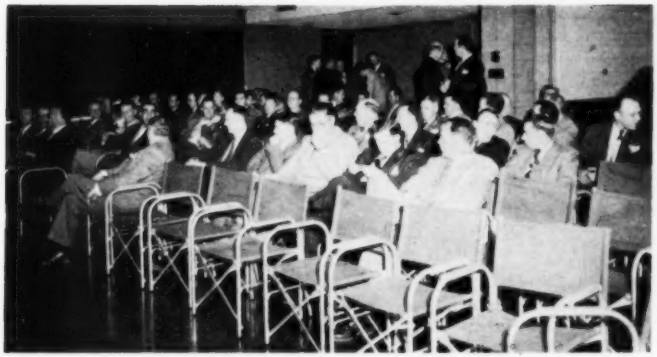
Just a year ago it seemed highly unlikely that the pipe industry could maintain for much longer the tremendous production pace set in 1950. After a dramatically steep rise during the years immediately following World War II the production curve showed unmistakable signs of leveling off, and most of the industry felt that there would be some downward adjustments in 1951. This general attitude, as we pointed out in our review of a year ago, was perhaps mainly a reflection of the industry's fear of a steel shortage which it was only just then beginning to feel. Although steel was in short supply throughout most of 1951, the pipe industry was not seriously affected because of the essential nature of the projects which it was called upon to supply. Indeed, the shortage may actually have been a factor in the gain in total pipe tonnage, particularly in types of pipe which do not require reinforcing. Another important factor in the tonnage gain was unquestionably the cost advantage of concrete pipe over clay and cast-iron units.

There was relatively little new plant construction during the year, but a number of companies carried out improvement and expansion programs which may have been a factor in the increased output. Some of the larger contracts for atomic energy projects were supplied by new plants erected near the construction work, but most of these installations will be dismantled when the contracts are completed. With these exceptions, however, it seems fairly clear that the concrete pipe industry's gain in output last year came largely from longer operating hours among the established plants.

The cement shortage was a factor in the 1951 picture, and there is evidence that some tonnage may actually have been lost during the summer months when the supply situation was most acute. In most cases, however, it appears that delivery schedules were adjusted so that contracts could be completed, and it is doubtful if lost production amounted to as much as 5 percent. Many companies, profiting from past experience, have been increasing their own facilities for storing cement.

On the technical front one of the outstanding events of the year was the American Concrete Pipe Association's first annual short course for plant foremen, salesmen, and others interested in the production and sale of concrete pipe. The three-day session was held in Chicago late in November, and over 100 individuals participated. In view of the outstanding success of the course, the





Part of the group which attended the American Concrete Pipe Association's first annual short course for plant foremen and salesmen.

association has tentative plans to repeat it in other sections of the country, as well as to reproduce one of the sessions on manufacturing processes at its forthcoming convention in Chicago. A summary of the subjects covered is presented elsewhere in this issue.

The industry and its association continued during 1951 to sponsor research and practical studies designed to improve the quality and performance of concrete pipe. One such project was the development of special reinforcement designs for large-diameter pipe to meet heavy load requirements and to conserve reinforcing steel. This work, which was initiated by J. E. Miller, manager of the Lewistown Pipe Company at Hillside, Ill., is now being carried on in cooperation with the association's research engineer. The studies will be continued this year, and it hoped that they will lead to the development of true theoretical design procedures to replace the empirical methods which are now used. Several designs which have been tested to date show strength advantages in ratios as high as 5 to 3 over conventional designs.

Considerable work was done by the association staff on the preparation of a *Handbook of Highway Culverts* based on data obtained in investigations at St. Anthony Falls hydraulic laboratory. The handbook will contain tables on the capacities of round concrete, corrugated metal, and corrugated metal arch pipes from very flat slopes to the critical slope for each type. It will contain comparisons of the discharges of the several types of pipe on equal slopes, and will also show the comparative slopes required for equal discharges. It is expected that a rough draft of the handbook will be completed in time for the association's annual convention late in February, and that publication of the book will follow later in the year.

The industry's outlook for 1952 is somewhat difficult to appraise. There seems fair assurance that material shortages will be no worse than in recent years, and the problem of reinforcing steel, at least, should show considerable improvement. Much of the industry's output goes into projects which directly affect public health and safety, and there seems now to be rather general recognition in Washington of the essentiality of steel requirements in connection with such work. This was not always the case even as recently as a year ago. Of the industry's total output in 1950 (detailed figures are not available for 1951), sewer and culvert pipe accounted for 3,500,000 tons, irrigation pipe for 4,000,000 tons, drain tile for 1,000,000 tons, and pressure pipe for 525,000 tons. It is expected that farm and irrigation demand will be somewhat lower in 1952, but that the loss in these markets will be at least balanced by gains in sewer and culvert business.

The pipe industry can look back on 1951 as a year of accomplishment. Although at the start of the year its association already represented most of the industry's productivity capacity, 16 new firms joined the organization during the year to bring membership to the highest level in history. This growth is in some measure an indication of the success of a reorganization plan carried out in 1950, subdividing the parent association into three groups in order to render more effective service to the various branches of the industry.

The industry's position at the start of 1952 is perhaps most of all attributable to the fine progress which it has made along technical lines during the last six years. The quality and performance of its products have been improved steadily, and during the same period both research and practical experience have made important contributions to knowledge of how concrete pipe should be used. These forward strides, in combination with the inherent economy of a material which is produced locally with local materials and local labor, add up to almost irrisistable selling advantages against competitive materials. So long as the industry continues to discharge its responsibilities to the public as it has during the last six years, there can be no rigid ceiling on sales potential.

Columbia Concrete Pipe Co. Operating New Block Plant

Concrete blocks, at the rate of 800 per hour, are being produced by the Columbia Concrete Pipe Company in its recently completed block plant in Wenatchee, Wash. A Besser Vibrapac block machine employed at the plant produces 15 different sizes of blocks in either pumice or concrete, according to Mert Hiatt, office manager. A crew of 7 men handles the complete operation.

Drying racks, containing the finished blocks, are transported by a Clark fork-lift truck to the seven curing rooms, which together are 50-ft. in length. The blocks are steam-cured for a period of 24 hours before being transferred by the fork-lift truck to the stockpiles. There are two storage silos, each with a capacity of 2,000 sacks of cement.

Krause Plant at Anchorage Sold to Alaska Sand & Gravel

Emil Krause has announced the sale of his concrete business in Anchorage, Alaska, including all franchises, equipment, machinery, and stock to Arthur Waldron, president of the Anchorage Sand and Gravel Company, Inc. Mr. Waldron plans to consolidate the equipment with his present concrete equipment and stock.

Mr. Krause came to Juneau, Alaska, in 1912 as a brick and stone mason contractor. He and Mrs. Krause established a concrete plant there in 1919, which they sold in 1946. Twelve years ago he came to Anchorage to establish the plant which he recently sold.

In addition to the Waldron sand and gravel business, which was started in 1938, the firm operates a concrete and pumice block plant on Ship Creek at the site of the original gravel plant and also a ready-mixed concrete plant in Anchorage.

William S. Hewett, 87, former Midwest builder, died on November 20, 1951, at St. Petersburg, Fla., Mr. Hewett was a pioneer in pre-stressed construction of concrete tanks and domes.

Pine Hill Enlarges Ground Storage Capacity for Aggregates— Installs Dust Collectors

By WALTER E. TRAUFFER

another ON THE SPOT report

IN the ready-mixed concrete industry efficiency and economy of operation and quality of product have been so emphasized in recent years that the industry has to a large extent become standardized in its aims and in its operations. In the design and operation of a ready-mix plant there is at best little room for originality and, as a result, there is a monotonous similarity in most of them. That deviations can be made from this similarity without sacrificing other advantages is proved by the operations of the Pine Hill Concrete Mix Corporation of Buffalo, N. Y. At one location this company operates two modern central-batch-in plants of large capacity with the latest features of control, one a two-stop and the other a one-stop plant. Unusual are the ground storage facilities for storing and reclaiming 60,000 tons of aggregates in nine sizes or any desired blend. Complete dust collecting systems in both plants keep them clean and prevent loss of scarce cement.

This company first went into the ready-mix business in a small way in 1942 and has grown steadily, producing 130,000 cu. yd. in 1950. In 1951 the 100,000-cu. yd. mark was passed early in August, and a total of 150,000 to 160,000 cu. yd. is expected for the year. The total would have been even larger had it not been for occasional shortages of cement and a falling off in construction volume in the last few months. It is company policy to accept all orders, large or small. On one rush 300-cu. yd. job about 25 miles from the plant 28 trucks were assigned. The first load was sent out at 5 a.m., and the pour was completed before 10 a.m.

Much of the success of this company is due to the business acumen of its head, Ludwig F. Kahle, and to his insistence on service and quality. He had been a concrete contractor in Buffalo for 25 years when, in 1942, he decided to enter the ready-mix business, primarily to supply his own needs. He was especially sold on the future of high-discharge truck mixers and started out with four 3-cu. yd. Ransomes. These were loaded from a bin at a gravel pit and cement was added from sacks. The demand for this product was so great that in 1946 he decided to quit the

• Left: This view of the Pine Hill Concrete Mix Corporation's facilities at Buffalo, N. Y., shows the new large 1-stop plant at the left, with the aggregate conveyor feeding to both plants. The cement receiving hopper and elevator for the older 2-stop plant is at the right.

• Below: A general view of the plant and yard, showing a part of the 60,000-ton aggregate storage and reclaiming system.

contracting business and devote his time exclusively to ready-mix production. He purchased the present site at 2255 Bailey Avenue, a few miles east of downtown Buffalo, and formed the present corporation.

Batching was at first done from a single 50-ton bin setup. Later an 80-cu. yd. 4-compartment Butler bin setup was added, and this was enlarged to 200-cu. yd. capacity and six compartments by running up the existing bin sides with drop column for support. Bulk cement storage was next provided by the installation of a 70-cu. yd. Butler cement bin complete with truck hopper, elevator, 6-cu. yd. batcher, and 200-gal. water weighing batcher. These last two units were and still are operated as a single plant. All operations were manually controlled and aggregate bins were crane charged.

Finally, in 1949, a new and larger Butler plant was built alongside the first, replacing the original 50-ton bin setup, and the new aggregate ground storage setup was completed in 1950. The new plant consists of a 300-cu. yd., 9-compartment Butler bin for storing 6 sizes of aggregate and 3 kinds of cement, complete with a 6-cu. yd. automatic batcher and a water weigh batcher. At the same time, new automatic Butler batchers for aggregates and cement were added to the old plant. Finally a separate bulk cement hopper, and a screw conveyor and elevator were added for the new plant.

The mixer fleet now consists of 50 Ransome truck mixers; and under ideal conditions 2,000 cu. yd. of concrete can be produced and delivered in an 8-hr. day. It is planned to add 10 more truck mixers early in 1952, trading a few of the older ones in on them.

• Ludwig F. Kahle, president of the company, and his brother Carl E. Kahle, general superintendent.

Aggregates purchased from local sources are brought in at the rate of 2,000 tons in 8 hours by a company-owned fleet of ten 10-ton Ford F8 dump trucks, all equipped with Baumis rear axles. These run up an earthen ramp from which they can dump from various points to the live and dead sections of the ground storage, which is served by three tunnel reclaiming conveyors. The trucks can discharge coarse aggregates through grating into six 100-ton concrete bins over a tunnel with a reclaiming belt conveyor. By backing the trucks across these gratings and dumping over a low concrete wall these aggregates can also be stored in open piles over the same tunnel and a short auxiliary tunnel at its end. These stockpiles have a live storage capacity of 5,000 tons or 20,000 tons by rehandling. The trucks can also discharge to another stockpiling system for sand. This has a live storage capacity of 5,000 tons reclaimable by another tunnel conveyor and about 25,000 tons by rehandling. The materials stored include sand, ½-, ⅜-, ¾-, 1-, 1¼- and 1½-in. gravel, and No. 1 and No. 2 crushed stone. Behind the sand storage is an 8-ft. high concrete retaining wall 300 ft. long. Above this is a 20-ft. high extension of I-beams and corrugated metal for additional storage and to protect neighboring property. All rehandling is done by a 1¼-cu. yd. Manitowoc crane.

The coarse aggregate tunnel conveyor is 85 ft. 4-in. long and at its end has a 22-ft. tunnel conveyor at right angles. The sand reclaiming conveyor is 77 ft. 10 in. long and discharges at right angles on the aggregate conveyor near its discharge end. A total of 38 gates feed these conveyors, which are all 24 in. wide.

The main inclined conveyor to the central batching plants is 241 ft. 6 in. long. It is supported on structural steel bents and has a curved corrugated metal cover. Scrapers clean this belt and a trough and pipe feed the silt into the truck washout sump. It discharges any desired size or blend to a revolving spout on top of the new plant, and this is controlled by wheel and cable from the tunnel. This spout can discharge direct to six 50-ton bins of the new plant and, *via* a chute and another

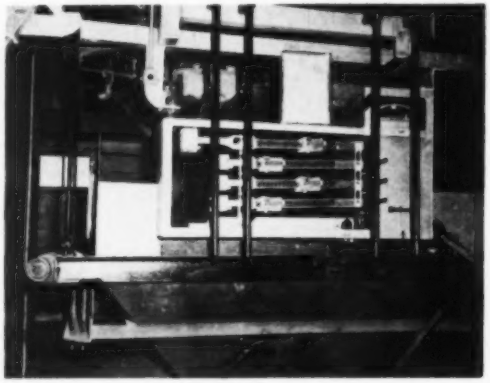
• Trucks discharging to storage over the sand reclaiming conveyor tunnel.

• Another view, showing the dust collector which serves the cement receiving hoppers for the old and new plants at the left and right, respectively.

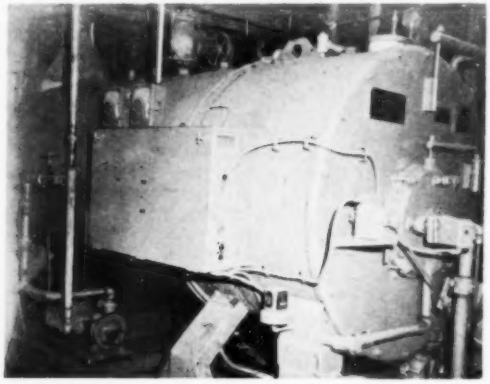
• The truck mixer loading spout and the dust collector connection in the new plant.

• The cement loading spout in the older plant, with the dust collector connections.

• The dust collector, connected to the truck mixer loading spout in the new plant.



• The new aggregate weighing batcher in the older plant.



• Steam for winter heating at each batching plant is supplied by one of these generators.

revolving spout, to the four 50-ton bins of the old plant. Butler top and bottom indicators in each bin compartment actuate bells and lights at the tunnel and guide the operator in his control of the flow of materials.

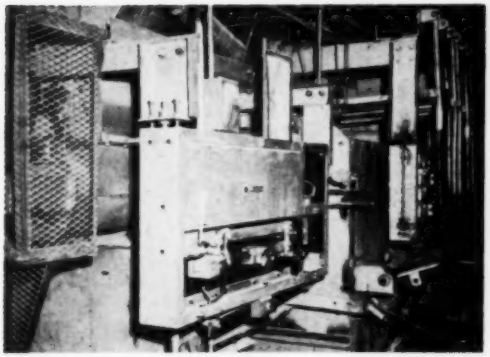
Bulk cement is received in special bulk trucks and is dumped to separate hoppers for each plant. Bucket elevators feed the cement into three 50-ton bin compartments over the new plant and two 50-ton bins over the old plant.

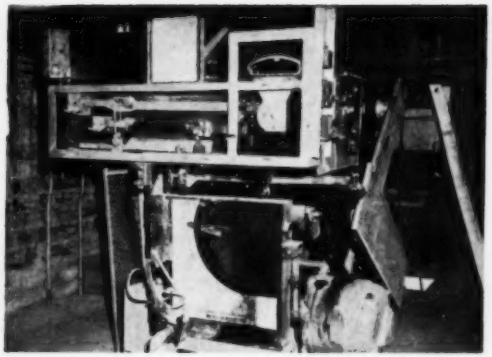
The new Butler batching plant is a 1-stop setup with Butler weighing batchers for 6-cu. yd. batches of aggregates and cement. Under each of the three cement compartments is a rotary feeder followed by a short cement screw with 2-speed drive for accurate control. Feed is started by push-buttons, and a mercoid switch on the one-beam cement scale automatically shuts off the feed at the desired weight. Aggregates are fed through lever-operated clamshell gates and measured on a 4-beam scale with over-and-under indicator. Water is weighed in a Butler tank equipped with a beam scale and with automatic filling facilities and manual discharge. Trucks are loaded from hoppers under the batchers.

The old 2-stop plant has a new batching setup consisting of separate Butler cement and aggregate weighing batchers which together weigh out a maximum of 6 cu. yd. per batch. Each of the two cement bin compartments is equipped with rotary feeders and feed screws also automatically controlled by push-buttons, and one-beam scale with a mercoid switch. Aggregates are fed to the other batcher through lever-operated clamshell gates. Trucks are loaded through telescoping chutes under the batchers.

The present mixer truck fleet consists of 50 Ransome truck mixers, 25 of 4½-cu. yd. and the others of 2- and 3-cu. yd. capacity. All are mounted on Ford chassis with Baumis and Thornton rear ends. All the company's trucks are serviced in a garage and shop at the plant with day and night crews. Scheduled for construction in 1952 is an 80- by 200-ft. 60-truck garage.

Dust collectors are connected to all points where cement could create a nuisance. The telescoping chute under the cement batcher in the old plant has a hood connected to a small bag-type dust collector. A circular collecting hood around the truck-loading chute at the new plant is connected to a Sly No. 16 "Economy" dust collector which was installed late in 1950. This is a 16-bag unit with 325 sq. ft. of cloth area





• Above, left: The aggregate and cement weighing batchers for the new plant, with cement and screws at the left.

• Above, right: The new automatic cement weighing batcher in the older plant.

and a capacity of 1,400 c.f.m. The fan is driven by a 3-hp., 1800-r.p.m. motor. The cement collected drops back into the cement truck hopper.

The most important sources of dust are at the bulk cement truck discharge points. Both plants have connections at this point to a Sly Type 3,600 bag-type collector with 4,488 sq. ft. of cloth and a capacity of 14,500 c.f.m. which was also installed in 1950. It is connected by a 19-in. pipe to the old plant and a 16-in. pipe to the new plant. It is driven by a 20-hp., 1,800-r.p.m. motor. An Eagle Polyflex-timer provides automatic shaker control. Collected dust is discharged into hoppers and returned to the truck discharge points.

The company's staff designs all mixes in line with accepted practices and specifications, either by proportion or strength as desired. Every effort is made to fill orders as received with the least possible delay. An intercommunication system between the batching floor, the office, and the aggregate tunnel helps to keep things running smoothly and eliminates delays.

In 1950 operations were expanded by the purchase of a plant at Depew, a suburb northeast of downtown Buffalo. This now serves the outlying areas east and northeast of the city, which are undergoing rapid residential and industrial expansion. This is a conventional type of plant with a Barber-Green aggregate conveyor and Butler bins and batchers.

Both plants at Bailey Ave. and the one at Depew are equipped to use Master Builders Pozzolith admixture. The Bailey Ave. plants also have individual gas-fired steam generators for jet heating of aggregates and water for winter operation. Each is a Combustion Control Company Amesteam generator with Fireye control. These use 125-lb. pressure and each has 289 sq. ft. of heating surface. Carl E. Kahle is general superintendent of all operations.

Ready Mix Review

(*From page* 253)

complete sizable expansion programs which are described as being equivalent to new plants. A large share of this additional capacity is fortunately located in areas which have been most seriously affected by cement shortages in recent years. The four plants referred to are expected to have a combined capacity of 12,700 bbl. daily, or 4,100,000 bbl. annually.

Some 25 plants have major expansion programs and improvement work in progress, and it is certain that a large share of the resulting new capacity will be available before the close of 1952. Such programs are expected to add some 34,700 bbl. daily, or 11,100,000 bbl. annually, to the industry's total capacity.

New cement manufacturing capacity planned for 1952, coupled with the ready-mixed-concrete industry's apparently favorable experience last year, seems to afford every assurance that in the year ahead there will be an adequate supply of cement available. Equitable distribution may still pose some problems, but the worst of these can probably be met by out-of-area purchasing. With the possible exception of the railroads, no one will be entirely happy with this solution, but it is at least preferable to empty storage bins.

Production Outlook Ready-mixed-concrete producers who answered our survey questionnaire took a cautious view of their prospects in the new year. Forty-one percent of the replies predicted that volume of business would be down an average of 18 percent from the 1951 level, and 32 percent predicted increases which also amounted to an average of 18 percent. The remaining 30 percent believe that demand will be about the same. When combined, the three categories suggest a net reduction of about 2 percent in total volume for 1952.

As indicated by the survey, most of the production loss will occur in the South. Fifty-nine percent of our Southern informants predicted cutbacks in production which averaged 24 percent. Eighteen percent predicted modest increases averaging 7 percent, while the remaining 23 percent indicated no significant change in 1952. In the net these forecasts suggest that volume for the area may be down as much as 12 percent. Forecasts made by producers in other areas of the country indicate relatively little change in total business.

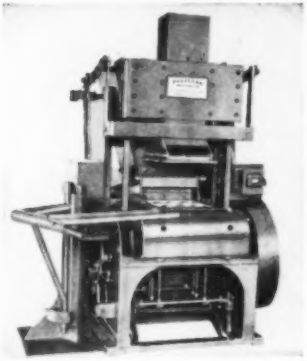
Central Arizona Producers Organize Concrete Assn.

With the objective of improving the quality of concrete and asphaltic concrete, a group of Phoenix, Ariz., producers recently formed the Central Arizona Concrete Association, to cooperate with architects, engineers, and construction and contracting firms.

Officers of the new association include John Fisher, Superior Sand and Gravel Company, president; H. J. Zabel, Acme Materials Company, vice-president; D. W. Kelley, Arizona Sand and Rock Company, secretary; and K. G. Benson, Union Rock and Materials Company, treasurer. Kenneth H. Talbot, a consulting engineer, was named executive secretary.

New Equipment Developed in 1951

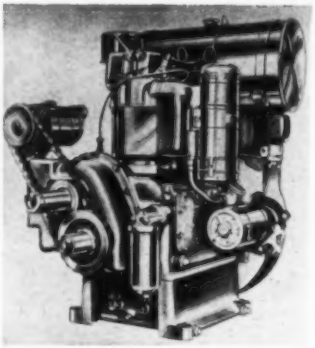
QUINN WIRE AND IRON WORKS, Boone, Ia., has introduced several new concrete pipe forms to its line of equipment. Arch culverts, manholes, and other forms of varied shapes are listed among those produced by the firm. One of the out-of-the-ordinary Quinn forms produces flared sections for concrete pipe culverts.



PRASCHAK MACHINE COMPANY, Marshfield, Wis., is producing an automatic "100" block machine, which features a combination of vibration, tamping, and packing. The unit has power-driven tampers in the material supply box which operates at a speed of 200 blows per minute during the vibrating period to compress the block material.

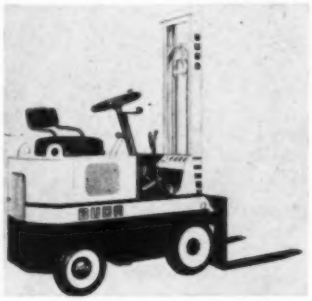
Dual-centered vibration adds to the formation of a well-packed texture through the entire block. Four hundred blocks are produced per hour by the machine, which uses cored pallets in automatic operation.

CLIPPER MANUFACTURING COMPANY, 2800 Warwick, Kansas City, Mo., has developed the Clipper "B-R" abrasive blade, which can be dropped, twisted in the cut, or bent without damage. It is made of layers of glass fiber cloth impregnated with resins and silicon carbide. Hydraulic pressure and scientific kiln heat processing produces the tough and resilient blade.



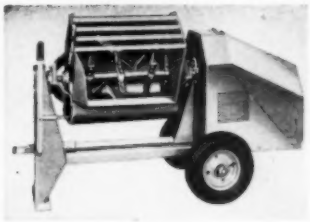
LISTER-BLACKSTONE, INC., 420 Lexington Avenue, New York 17, N. Y., has introduced two models of air-cooled diesel engines. The Lister-Blackstone firm sells and services these units, which are made in England by Armstrong-Siddley Motors. Of the two models available, one is a single-cylinder that develops 8 hp., and the other is a two-cylinder developing 20 hp.

They are designed to feature diesel economy of operation with the advantages of air-cooling in certain applications. Concrete mixers, pumps, and generators are suggested applications. Hand or electric starting is optional. The crankshaft is designed to take standard clutches, take-off units, and other transmission devices.



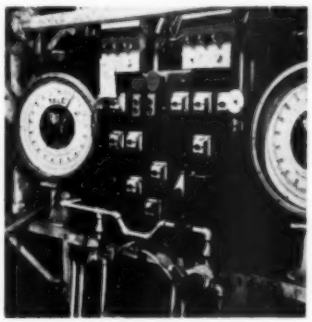
BUDA COMPANY, HARVEY, ILL., has marketed two new models of fork lift trucks, the "FB20-24" and the "FB20-15." These trucks, which are rated for 2,000-lb. capacity, are made in 24- and 15-in. load centers. Mast heights range from 65 in. to 83 in., and maximum lifts from 6 to 10 ft., depending on mast length. The width is 32 in. and the wheelbase 38 in., with a turning radius of 62¾ in. outside. Weights range from 3,500 lb. to 4,100 lb.

Power is supplied by a 4-cylinder Waukesha engine with starter and voltage regulator. Lifting and tilting is by hydraulic cylinders with positive controls and limit stops. Forks are adjustable in width. These trucks, with their short length, are designed for shorter turns.

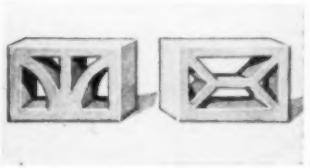


THE KNICKERBOCKER COMPANY, 643 Liberty Street, Jackson, Mich., is manufacturing a portable ½-bag plaster and mortar mixer called the "Mix-Miser." The machine, which is 29½ in. wide, 36¼ in. high, and has a capacity of 3 cu. ft., is designed for use on small jobs requiring a limited amount of mix at one time. It may also be used for larger jobs where mixing may be kept close to the work.

Among the features of the unit are a hinged protecting grid, labyrinth packing glands, self-aligning ball-bearings, a replaceable blade and hoe assembly, and a steel weather hood. It is available in either the gasoline- or electric-powered type.

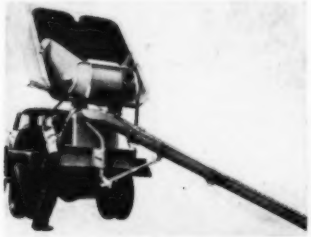


HELTZEL STEEL FORM AND IRON CO., Warren O., has announced that increased mechanization and improved aggregate-handling systems have been included in their setups for complete batching plants. One of the additions to their completely mechanized plants is the remote-control panel for weighing and discharging the material.

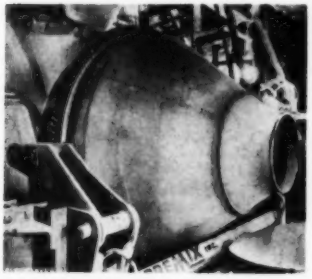


CONCRETE MACHINERY COMPANY, Hickory, N. C., has developed a new block machine which produces 4- by 8- by 12-in. blocks in artistic designs for ornamenal needs, permanent fences, and various other uses. The "Aristocrat" has a special tamping device which assures dense concrete with smooth sides, sharp corners and edges.

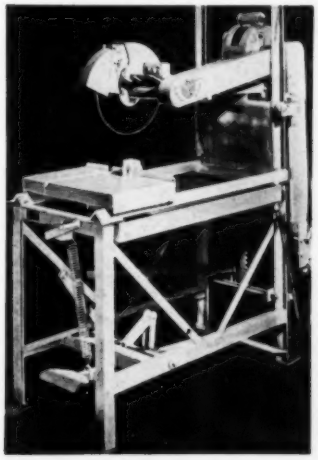
STEARNS MANUFACTURING CO., INC., Adrian, Mich., is now featuring the new Stearns "50," which comes equipped with an automatic pallet return, and a cleaning and oiling mechanism. As the empty pallets are conveyed along the side of the machine, they are mechanically brushed, flooded with oil, and wiped. The pallet-handling device is a self-contained unit mounted on heavy castors which can be readily moved away from the block machine to permit its easy servicing. The unit eliminates all handling of pallets by hand.



MAXON CONSTRUCTION CO., INC., DUMPCRETE DIVISION, Dayton 2, O., has made several improvements on its "Dumpcrete" concrete carrier during the last year. The current model features its easy convertibility to an all-round utility body. The baffle and the chute assembly can be removed quickly. For rock or earth moving, the entire gate assembly lifts out as a single unit.

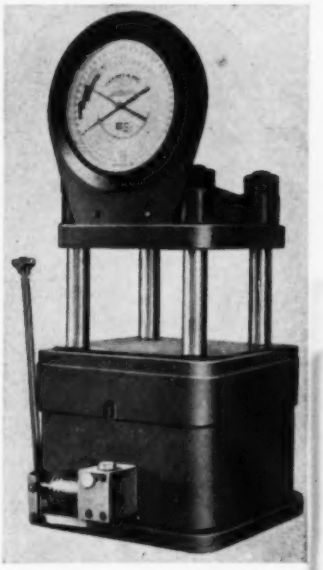


SUPREMIX, INC., Adrian, Mich., has developed a semi-portable model mixer called "Expressway," which utilizes the same tilt-up mixer as the "Supremix." The features of this model make it particularly adaptable for projects where the plant may be subject to several moves. The unit is quickly and easily dismantled and re-erected.

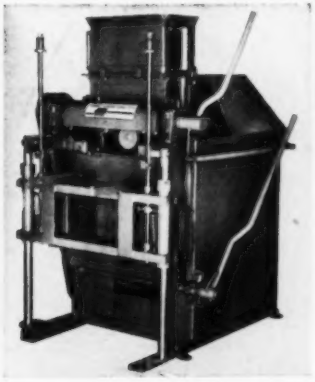


SUPREME EQUIPMENT CORPORATION, 12415, Euclid Avenue, Cleveland 6, O., has produced a masonry saw which reportedly can cut any type of hardness of masonry material with precision, using either abrasive or diamond-type cutting wheels.

The "Supreme Speed Kut" has a steel frame and is easily portable. A handcrank positions the cutting wheel for handling any commercial size block, and a toe pedal feeds the saw into the work with even, non-stalling pressure. The cutting table rides on enclosed ball-bearings. The unit is also equipped to handle the cutting of wet blocks.



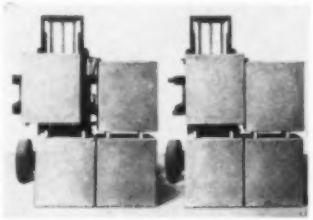
FORNEY'S INC., New Castle, Pa., has made available a compact, partable, hydraulic compression tester. The machine features a direct reading pressure gauge, 12-in. diameter enclosed piston, self-aligning lower platen, and a dual high- and low-pressure pump. The unit develops a ram pressure of 175 tons.



FLEMING MANUFACTURING COMPANY, 4989 Fyler Avenue, St. Louis 9, Mo., has introduced a block machine with a capacity of 100 blocks per hour that takes only 1,350 sq. in. of floor space. The "FMC 100" produces standard smooth-finish block, in heights of 2 to 8 in. without attachments. Either wood or steel pallets may be used.

CONCRETE TRANSPORT MIXER CO., 4985 Fyler Avenue, St. Louis, Mo., has added another unit to its line of truck mixers known as the "Rocket." It is of the revolving drum type, and has a capacity of 4½ cu. yd. One of the features of this unit is the hydraulic lift swing chute at the rear of the truck.

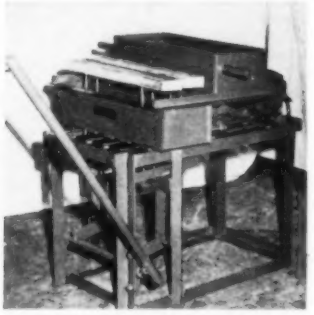
The "Rocket" will be offered with a choice of three different drives: a power take-off drive, in conjunction with a hydraulic pump and motor; a straight power take-off mechanical operation; and a separate engine drive.



ERICKSON POWER LIFT TRUCKS, INC., 1101 Marshall N.E., Minneapolis 13, Minn., has announced the availability of a sideshifter mechanism for its power lift trucks. The hydraulically-operated device permits the operator to shift the fork load 3½ in. either to the right or to the left of center. This tolerance permits stockpiling without bringing the truck into perfect alignment.

COOK BROTHERS EQUIPMENT CO., 1815 N. Broadway, Los Angeles, Calif., has introduced a truck designed especially for carrying a concrete mixer.

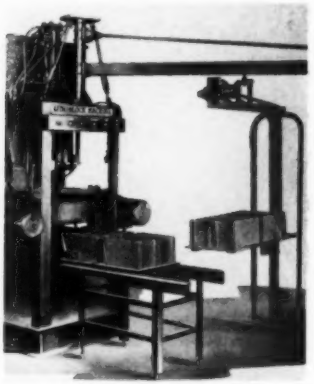
This truck, the "M-10," has a 169-in. wheelbase and weighs 11,680 lb. Distribution of the weight has been arranged so that the extremely heavy front axle carries more of the load, thus permitting a greater payload in the mixer. The mixer motor has been located adjacent to the cab to place more weight forward.



GENERAL ENGINES CO., INC., Gloucester City, N. J., will place a new adobe block machine on the market in 1952. The "Rainbow Rock" has a capacity of 1,000 blocks a day, and uses plain 2- by 4-in. boards for pallets. It makes two 1¼- by 3½- by 24-in. slump blocks in each operation, and its height is adjustable from 1 to 4 in.

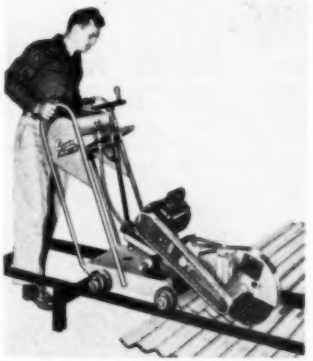
CONSTRUCTION MACHINERY COMPANY, Waterloo, Ia., has marketed a 3-cu. ft. mortar or small batch mixer called the "Hoe-Boy." The unit, which may be secured in either the gasoline- or electric-powered model, is 29 in. wide, with a 36½-in. charging height and 15-in. discharging.

The machine features adjustable, hoe-type triple mixing blades; a safety grating with a bag splitter attached; self-aligning and lubricating shaft bearings; welded frame; and machine-cut sprockets and roller chain drive.



LITH-I-BAR COMPANY, Holland, Mich., has introduced a new high-speed air motor off-bearer for use with its L-5 and L-3 block machines, which offers several improvements in both machine operation and plant layout.

This compact, finger-tip unit is counterbalanced for easy movement and travels through a full-360-degree arc so that racking, cubing, and pallet handling can be accomplished at the machine without hand labor—thus conserving both plant space and man-power.



CLIPPER MANUFACTURING COMPANY, Kansas City, Mo., has introduced a "Convertible" masonry saw, which will not only cut any type of masonry material, wet or dry, but can be converted into a concrete saw and a track saw. The model HD Clipper may be converted into a concrete saw by placing the cutting head on the "Convertible" (four-wheeled) cart. The "Convertible" cart with the cutting head may also be placed on a track and operated as a track saw for the gang sawing of concrete brick, block, and so forth.

2nd Quality Concrete Course Scheduled at Atlanta, Feb. 4-6

The second annual quality concrete short course will be held at Georgia Institute of Technology, Atlanta, on February 4-6, 1952, according to an announcement issued recently by Robert E. Stiemke, director of the School of Civil Engineering at the Institute.

Intended to bring members of the construction industry up to date on the design and control of concrete mixtures, placing, forms, and curing, the course offers actual laboratory participation and comprehensive instruction from representatives of a number of qualified organizations.

There will be two sections in the course. One section will appeal to ready-mix operators, engineers, architects, and contractors. The other sections will interest concrete masonry and pipe manufacturers.

Professor R. J. Paquette, director of the short course, which is being conducted by the School of Civil Engineering, stressed that a full day in the laboratory will be given to all enrolled in the course. Participants will actually make tests and determine correct weights and volumes of materials to obtain a specified concrete.

The School of Civil Engineering urged that registration be made early. The registration fee of $15 includes a ticket to the banquet on February 5, in the Tech dining hall. Additional tickets for the ladies or other guests to the banquet may be purchased for $3 each upon application to the Georgia Institute of Technology, Atlanta, Ga.

It was also pointed out that hotel reservations should be made directly with the hotel of choice as far in advance as possible. Dormitory-style rooms on and adjacent to the Georgia Tech campus may be obtained by writing to the Men's Residence Halls, 727 Williams Street, N. W., Atlanta, Ga.

All registration inquiries should be addressed to R. E. Eskew, acting co-ordinator, Short Courses and Conferences, Engineering Extension Division, Georgia Institute of Technology, Atlanta, Ga.

In addition to Tech's President Blake R. Van Leer and others from the School of Civil Engineering, the following will be "instructors" at the sessions: R. E. Copeland, director of engineering, National Concrete Masonry Association, Chicago; John G. Hendrickson, director of engineering, American Concrete Pipe Association, Chicago; and Carl A. Menzel, manager, housing and products bureau; and E. C. Wenger, manager, conservation bureau, Portland Cement Association, Chicago.

Cooperating agencies for the short course include the American Concrete Pipe Association, the Atlanta section of the American Institute of Architects, the Georgia section of the American Society of Civil Engineers, the Georgia section of the Associated General Contractors, and the Georgia Engineering Society, the Georgia Society of Professional Engineers, the National Ready-Mixed Concrete Assn., the Portland Cement Association, the Atlanta Post of the Society of American Military Engineers, the Georgia Concrete Pipe Manufacturing Association, and the National Concrete Masonry Association.

200 Members and Guests Hear Timely Addresses At 39th N.A.S.M. Meeting

The National Association of Silo Manufacturers held their thirty-ninth annual convention at the Palmer House in Chicago on November 26 and 27, 1951, with about 200 members and guests in attendance.

Among the speakers who led discussion on silage developments were Dr. Charles F. Rogers of the Ohio Agricultural Experiment Station; Dr. Carl B. Bender, director of research in grassland farming, The Sperry Corporation, New York City; and T. E. Milliman, director of research, Grange League Federation, Ithaca, N. Y.

George W. Whitesides gave an interesting report on the research being done by his organization, the George W. Whitesides Company of Louisville, Ky., in developing processes applicable to the construction and maintenance of silos. The first of these processes is a membrane coating for new concrete walls, to make for better curing; the second is an impregnation, or "film in depth", for the walls of older structures, to prolong their useful life.

A little of the human side of government defense planning was injected by C. L. Oheim of the Washington NPA office, in his presentation of the Controlled Materials Plan.

C. Boyd Ross of the Marietta Concrete Corporation, Baltimore, Md., was elected president of the association for the ensuing year. Ben F. Gurney of the Madison Silo Company, Madison, Wis., was named vice-president. Zur W. Craine of Craine, Inc., Norwich, N. Y., was re-elected secretary-treasurer. Mr. Craine has served the association in this capacity for many years.

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LOOSEN IT UP WITH CLEVELAND AIR VIBRATORS
It's Being Done Every Day
THE CLEVELAND VIBRATOR COMPANY
2807 Clinton Ave. - Cleveland 13, Ohio
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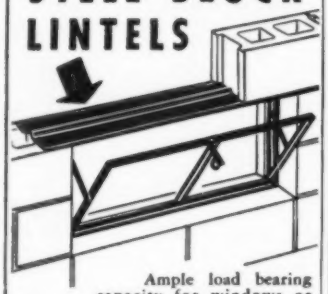
For better, stronger window installations

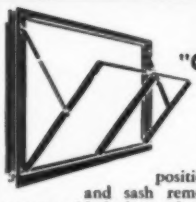
VENTO

STEEL BLOCK LINTELS



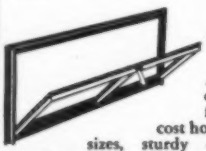
Ample load bearing capacity for windows or doors. Available from 2-ft. 6-in. to 5-ft. Formed from 10 gauge hot rolled steel with stiffening crimp in center. Beveled edge provides masonry bond and seat for mortar. Saves costs through use with standard 8-inch blocks. Vento pressed steel angle lintels for brick construction also available.

VENTO STEEL BASEMENT WINDOWS



VENTO "CHAMPION"

Three sizes. Effortless operation gives three position ventilation and sash removal. Double contact with leak-proof water-shed sill stops wind and rain. 14 gauge electric welded frame. Fins welded to jambs for easy installation in block or poured walls.



VENTO "THRIFTY"

A real economy window for lower cost housing. Three sizes, sturdy construction, smooth operation, two position ventilation and easy sash removal. Fin flanges at jambs for quick installations.

***Also** casement, utility and barn windows. Write for full information.*

VENTO STEEL PRODUCTS CO., INC.
254 COLORADO AVE. BUFFALO 15, N.Y.

NEW MACHINERY and SUPPLIES

● 3-Yard Truck Mixer

A truck mixer-agitator designed to provide maximum payload has been announced by the Construction Machinery Company, P. O. Box 120, Waterloo, Ia. Ia.

The "Transcrete" mixer has full-size mixing blades the entire length of the drum for fast mixing action and rapid discharging. A right-angle drive powers the mixer from a Ford power unit and transmission through a modified Ford truck rear-axle gearing to a sprocket and chain drum drive. This provides two speeds—one for mixing and one for agitating. The hinged discharge chute swings out of the way when not in use.

● Spherical Roller Bearings

Bearings having spherical contour rollers operating in a spherical outer race are able to take care of approximately three degrees of misalignment in the

DISCOVER FOR YOURSELF HOW YOU CAN SAVE ON BAGS, LABOR, TIME, MONEY !

Baughman
"Hi-Speed"
BULK CEMENT TRANSPORT BODIES

Avoid the business loss and inconvenience of haphazard rail deliveries . . . prevent inventory tie-ups resulting from larger-than-required rail shipments . . . stop limiting your business location possibilities to rail sites. Cut out your bag costs . . . save time, labor and money.

Handle cement the modern way—in BULK! This SELF-UNLOADING Baughman body is designed and built for high speed, low cost loading, hauling and delivery. Saves in every way—there's a size for your requirements. Full details sent on request. No obligation. WRITE TODAY!

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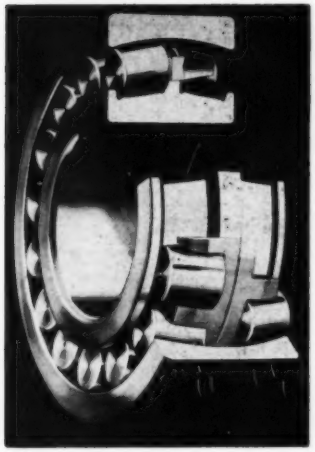
"There is a Baughman Distributor Near You"



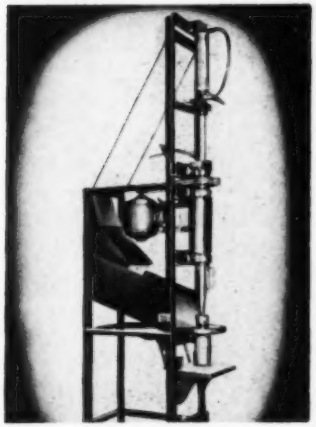
shaft, according to information from the Bantam Bearings Division, The Torrington Company, South Bend 21, Ind.

These bearings are available in straight or tapered bores and in numerous sizes. They are recommended for heavy-duty applications where there is considerable radial pressure, as the large race-to-roller contact provides ample bearing surface.

● Drain-Tile Maker

A drain-tile maker, the "Tile-O-Matic" has been announced by the Schuch Bros. Machine Company, P.O. Box No. 3911, Detroit 27, Mich.

Among the features claimed for this machine are ample power from a 5-hp. motor; safe operation, as the machine will not operate unless the tile jacket is in place; no parts to lubricate; constant packer rise to regulate density of the pipe; and production of 4-, 5-, 6-, and



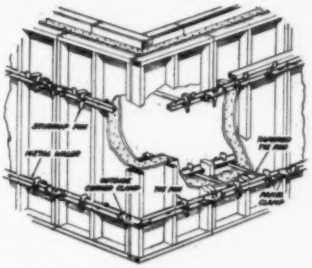
8-in. diameter pipe or intermediate sizes.

Construction is simple, the parts being welded. Production on the machine is claimed to reach 450 units hourly.

● Concrete Forming

A new method of forming concrete walls for basement, one-story houses and light industrial structures has been announced by the Rocform Corporation, 15160 W. Eight Mile Road, Detroit 35, Mich.

The system utilizes special tapered tie rods that space and tie the forms together when used with the special tie rod pins. Walers are of aluminum and are attached permanently to the forms and panel and corner clamps hold the form sections securely in place. It is claimed that basement forms can be erected in 2 to 3 hours, and that ranch type houses can be built in about 5 weeks. The tie rods and other items used in the system are easily reclaimed from each job, eliminating the need for using new tie rods, walers, and forming lumber for each job.



YOUR CONCRETE PRODUCTS
Better 4 Ways WHEN YOU USE
CORALUX The Annealed PERLITE AGGREGATE

TRADE MARK

1. **LIGHTER WEIGHT** . . . Coralux concrete aggregate itself weighs only 7½ lbs. per cu. ft.
2. **HIGH THERMAL INSULATION** . . . Coralux at 50 lbs. density has thermal conductivity of 1.48.
3. **FIRE RESISTANT** . . . Underwriters' Fire Tested.
4. **FASTER CURING, EASIER WORKING** . . . Requires 30% less water.

CORALUX Concrete aggregate with Portland Cement results in the lightest weight mineral concrete. Its many unique properties,—lightweight, high thermal insulating values, fire resistance, and unusual compressive strength, makes it highly recommended for fire proofing, radiant heating, roof decks, grade level floors, farm structures and deck slabs, cant strips, saddles, crickets.

MAKE CORALUX YOURSELF
BECOME AN EXCLUSIVE CORALUX MANUFACTURER

Excellent conditions for manufacturing Coralux exist today. Consumption of Coralux Perlite has increased 300% in the last year. Indications are that, with existing potential, this increase will DOUBLE next year. CONFIDENTIAL cost and profit figures and manufacturing information will be furnished you by a special Schundler representative or by requesting Coralux brochure 12C-SC.

Write Today!

Schundler process developments and techniques are safeguarded in their modern research laboratories.

View of F. E. Schundler Mine at Ne Agua, New Mexico.

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AND ITS EXCLUSIVE CORALUX LICENSEES

JOLIET, ILLINOIS — LONG ISLAND CITY, N. Y.

If you want to own your business or expand your present operation, here's your opportunity!

You can manufacture all sizes of concrete pipe for projects in your area with a Universal pipe-making machine.

It's not necessary to purchase equipment unless interested. You can *lease* from Universal and go right into business!

Full particulars on request. Write today!

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297 S. High St., Columbus 15, Ohio

● High Pressure Fan

A high-pressure fan for removing fumes and dust and for supplying air to oil and gas furnaces is being marketed by the Standard Electric Manufacturing Company, West Berlin, N. J.

The fan is powered with a ¼-hp. motor and delivers 450 c.f.m. in the model "BL50," and 250 c.f.m. in the model "BL50S." The fan is all-aluminum but may be obtained in cast-iron if necessary, and in other sizes.

In addition to the high-pressure fan

the company also manufactures a large line of fans, blowers, and ventilating devices for many industrial applications.

Buffalo, N. Y., Producer Stephen Kubiak, Dies at 78

Stephen J. Kubiak, 78, founder of a concrete products manufacturing business that bears his name, died suddenly in his home in Buffalo, N. Y., on November 13. He had conducted the business in Buffalo since 1924.

Mr. Kubiak came to Buffalo from Poland in 1906. He was a member of the Niagara Frontier Builders Association and the National Concrete Manufacturers Association.

Stanton Walker Addresses U. of Minn. Concrete Parley

At the first annual concrete conference held at the University of Minnesota center for continuation study on December 3 and 4 the main speaker was Stanton Walker, engineering director for the National Ready Mixed Concrete Association and the National Sand and Gravel Association.

Those attending the meeting were concrete producers, cement finishers, architects, engineers, contractors, and others in the construction industry.

Blackhawk Transitmix, Inc., Opens Fourth Installation

At Love's Park, Ill., the footings for a ready-mixed concrete plant have been started for Blackhawk Transitmix, Inc., operated by Frank Newkirk of Joliet, Ill. Mr. Newkirk also owns similar installations at Joliet, Aurora, and Naperville, Ill.

A fleet of truck mixers will be put into service after the Pike Road has been improved; and a Chicago and North Western Railway spur will be constructed to serve the plant. Major features of the installation will be two bulk cement storage bins with a capacity of 800 bbl. These will be loaded from the siding by screw conveyors and bucket elevator elevator system. Companion sand and gravel bins of comparable capacity will be loaded by crane from stockpiles on the location.

The Yoder Company, Cleveland, O., has disposed of its concrete machinery business to Joseph A. Jones, of Pittsburgh, Pa. Mr. Jones, who was general sales manager of the Yoder concrete machinery division, will continue the manufacture and sale of the Yoder concrete testing machines, continuous mixers, and other equipment. He will operate under the firm name of the J. A. Jones Concrete Machinery Co., in Pittsburgh, Pa.

The F & A Laboratories, Inc., are giving a dinner at the Hotel New Yorker, for all F & A Licensees on February 17, the day preceding the opening of the N.C.M.A. convention. M. A. Arnold Sr., J. W. Warren Sr., and Otto and Paul Formigli, the developers of the F & A System will all be present. Mr. Arnold, who has just returned from Germany, is calling this meeting to acquaint all of the licensees with some important new developments in the system.

★STAR

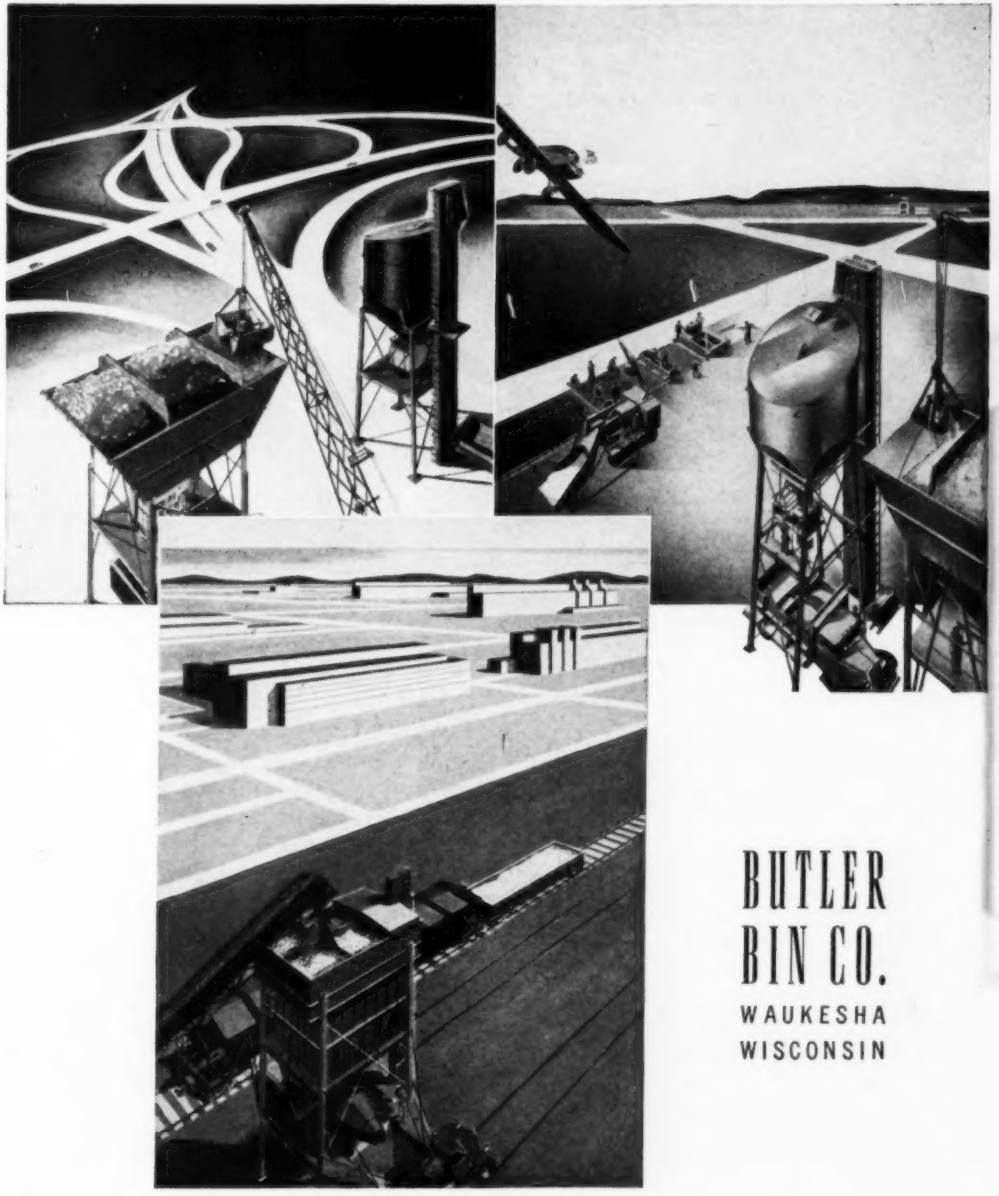
Inserts

Specially designed inserts and parts for the precast concrete industry.

Non-corrosive of high tensile strength metal. Accurate to specification and close tolerances. Perfect threaded units.

What are your problems and requirements? We invite your inquiries.

STAR EXPANSION PRODUCTS COMPANY
149 Cedar Street
New York 6, N. Y.



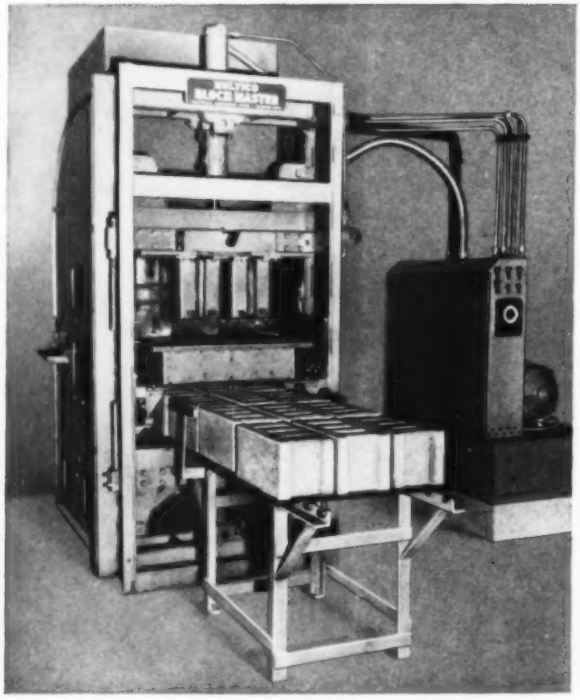
BUTLER
BIN CO.
WAUKESHA
WISCONSIN

New production records for the world's largest construction projects are today attained through important engineering advances in automatic operation offered by BUTLER equipment.

PRODUCTION TESTED!

Blockmaster #3

High Production · Fully Automatic · Hydraulically Powered



The Multico Blockmaster No. 3 is now ready for *your* plant—after three years of production testing in many plants. Producing three blocks per cycle, it is a completely automatic machine, requiring labor only to off-bear block. Hydraulic power from a separate unit provides smooth, quiet operation and serves additional machines in future expansion. The compression action combines pressure, vibration, and tamping, for perfect blocks. Plain pallets are used in making any size or style of block with any aggregate.

Both the Blockmaster No. 3 and the newly modified No. 2 have 50% less moving parts than any other machine in their capacity classes. This means an absolute minimum of maintenance.

Make this proven Blockmaster No. 3 your next machine; call or write for further information.

Multiplex Machinery Corporation has been making concrete production machinery for over 40 years. Our engineers will help you plan your plant expansion. We can show you how Multiplex automatic block machines, mixers, skip hoists, and compartment aggregate bins can make your operations more profitable.

MULTIPLEX MACHINERY CORPORATION

ELMORE • OHIO

COOK BROS. bring You the RIGHT Combination for BIGGER Profit Margins

COOK BROS. SERIES "M" TRUCK and CHALLENGE MIXER

Each truck is equipped with hydraulic seat for extra driver comfort.

With "BUILT-IN" Greater Payload on Shorter Wheelbase

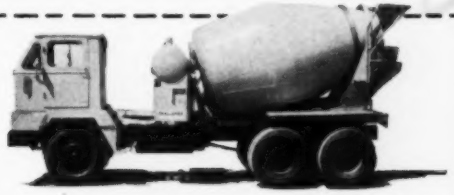
Take a look at Cook Bros. M-310, above, and the M-36, lower left, and you'll see at once that here is something brand new for the ready-mixed concrete industry... a truck and mixer combination designed to serve the industry's special needs. It looks different... it *is* different! Every inch of its shorter wheelbase is put to work hauling MORE NET PAYLOAD to every job.

In addition to extreme maneuverability, the series "M" Trucks are designed so both mixer engine and truck engine are easily accessible for service, repair, and maintenance... mechanic uses level surface of front fender to sit on. You will note from the illustrations how much room there is around the mixer engine... giving the service man plenty of elbow room. The hood of the truck is hinged at point "A," above, and when in raised position, the engine is completely "out in the open."

So, whether you choose the M-310 with its 6 cu. yard mixer, or the M-36 with its 4 cu. yard mixer, or both... you'll get MAXIMUM PAYLOAD, MAXIMUM HANDLING EASE on MINIMUM WHEELBASE *plus* EASY SERVICE AND MAINTENANCE.

PUT YOUR CHIPS ON A WINNING COMBINATION... Cook Bros. Series "M" Truck and Challenge Mixer.

M-36, a 145" wheelbase, two axle truck with 4 cu. yard Challenge Mixer... legal with 4 yards of concrete in most states.



M-310, a 163" wheelbase, three axle truck with 6 cu. yard Challenge Mixer... legal with 6 yards of concrete in many states.

See the "M-310" at the Chicago Show, as well as other Challenge Mixers... Cook Bros. Booths, Numbers 112 and 113.

For complete information today, including the name of your nearest Challenge dealer, write

COOK BROS. TRUCK EQUIPMENT

COOK BROS. EQUIPMENT CO.

1815 No. Broadway, CApitol 2-9111, Los Angeles 31, Calif

Exclusive National Distributors for CHALLENGE, The Modern, Streamlined Truck Mixer

Plant of Pottstown Cement Block Co., Pottstown, Penna. Consists of 600 bbl. round bin, elevated above mixer for concrete blocks. Elevator, storage bin, and screw conveyor designed and fitted to their conditions.

Cement Storage

This bin ← shipped in sections field bolted

This bin → shipped in one piece, all welded

Plant of Acchione Contracting Co., Philadelphia, Penna. Consists of 600 bbl. portable bin and supports. Standard arrangement of track screw, vertical elevator, scale of 2000 lb. capacity. Bin all welded and shipped in one piece.

Plant of G. & W. H. Corson — Plymouth Meeting, Pa.

Concrete Plant Central Mix Type

- *Bin is eight (8) compartment*
- *Batcher and Mixer 2 cu. yd.*
- *Belt Conveyor is 24" x 240'*
- *Mixer carried on separate concrete piers*

Concrete Plants — either central mix or dry batch.

Cement storage bins and batchers, with elevators, etc.

Bins — Elevators — Screw Conveyors — Belt Conv. — Batchers — Scales

We design, fabricate complete plants under one contract.

Inquiries Invited

FANNING SCHUETT ENGINEERING CO.

Phila., Pa., 4325 N. 3rd Street **New York (7) N. Y., 220 Broadway**

JUST THINK... STEADY PRODUCTION OF...

15,000 BLOCK PER DAY

...and LABOR COST

only 1 1/4c PER BLOCK

WITH THE

automatic

LITH-I-BLOCK

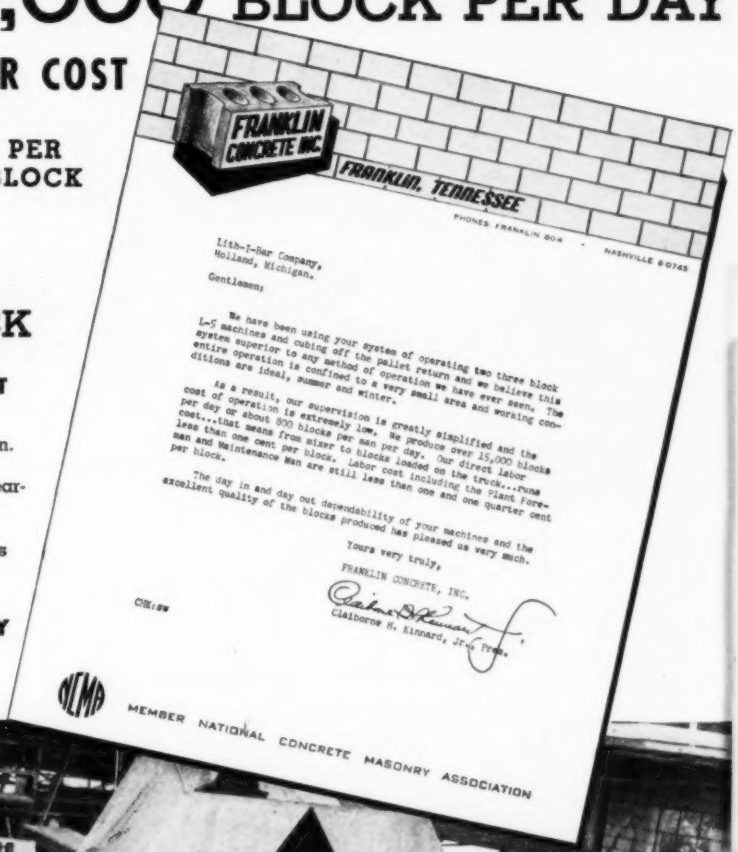
DOUBLE L-5
PRODUCTION UNIT

- See the Lith-I-Block in action.
- Write for the names of near-by Lith-I-Block producers.
- See how Lith-I-Block meets your needs.

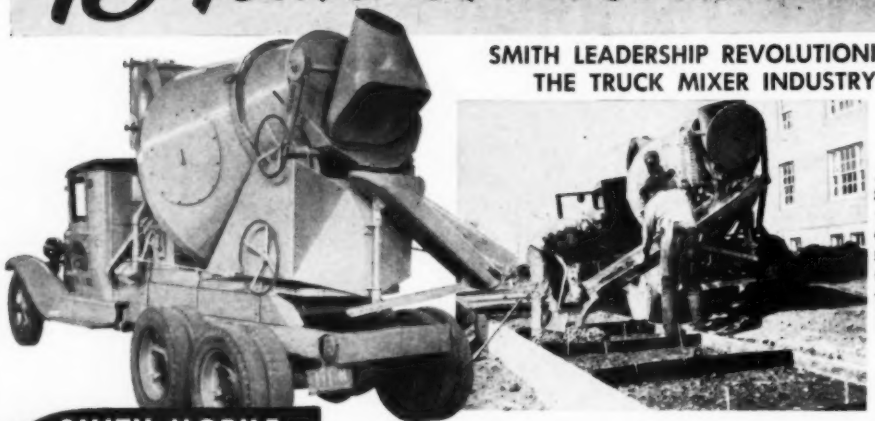
LITH-I-BAR COMPANY

HOLLAND, MICHIGAN

Department CM-1


FRANKLIN CONCRETE INC.
FRANKLIN, TENNESSEE
PHONES: FRANKLIN 804 • NASHVILLE 6-0745
Lith-I-Bar Company,
Holland, Michigan.
Gentlemen:
We have been using your system of operating two three block L-5 machines and cubing off the pallet return and we believe this system superior to any method of operation we have ever seen. The entire operation is confined to a very small area and working conditions are ideal, summer and winter.
As a result, our supervision is greatly simplified and the cost of operation is extremely low. We produce over 15,000 blocks per day or about 890 blocks per man per day. Our direct labor cost...that means from mixer to blocks loaded on the truck...runs less than one cent per block. Labor cost including the Plant Foreman and Maintenance Man are still less than one and one quarter cent per block.
The day in and day out dependability of your machines and the excellent quality of the blocks produced has pleased us very much.
Yours very truly,
FRANKLIN CONCRETE, INC.
Claiborne H. Kinnard, Jr., Pres.
CHK:sw
NCMA
MEMBER NATIONAL CONCRETE MASONRY ASSOCIATION

15 Years of PROGRESS



SMITH LEADERSHIP REVOLUTIONIZED THE TRUCK MIXER INDUSTRY

An early model Smith-Mobile working on Greendale Housing Project near the city of Milwaukee, in 1937.

SMITH-MOBILE
Early Model Built in 1937

1st in the Field

FIRST high discharge truck mixer.

FIRST to eliminate the need for hoist or ramp.

FIRST with a controlled discharge.

FIRST to provide visible mixing.

FIRST with feed chute charging.

FIRST to provide for shrinking and mixing of batch as materials enter drum.

FIRST to introduce water through the feed opening.

FIRST to provide water injection through both ends of drum.

FIRST steep distributing spout, especially ideal for dry concrete.

FIRST to announce fluid drive as standard equipment.

FIRST with LOADLIMIT models.

1952 Model
SMITH-MOBILE

You want the very finest truck mixer that money can buy. You get it in the Smith-Mobile.

Rome wasn't built in a day. Nor was the modern Smith-Mobile evolved overnight. It was designed around basic Smith inventions and patents long before anybody else built high discharge truck mixers. Important refinements were added from year to year, all based on intensive research and practical experience gained in the field.

Today, Smith-Mobile continues, as always, to be the acknowledged leader in the industry. Buy Smith-Mobile and be sure you are getting the best. Five sizes available. Standard or LOADLIMIT models.

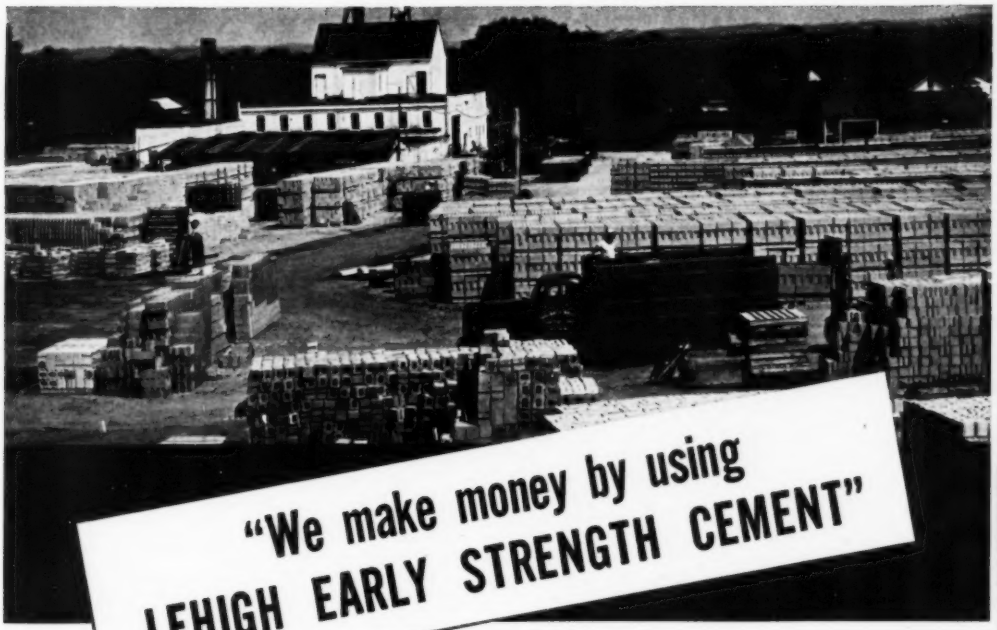
Write for descriptive literature.

THE T. L. SMITH COMPANY, 2887 N. 32nd Street, Milwaukee 45, Wis.

New, 6½ yard standard Smith-Mobile. Also available in LOADLIMIT model.

SMITH MOBILE

The Original High Discharge Truck Mixer and Agitator



"We make money by using LEHIGH EARLY STRENGTH CEMENT"

Mr. Jacob H. Irions, president of Irions' Concrete Block Co., demonstrates his confidence in the quality of his products. He used them throughout in the construction of his home. And he has equal confidence in Lehigh Early Strength Cement, knows its advantages from years of use.

He writes: "Here are a few of the reasons why we make money by using Lehigh Early Strength Cement:

. . . reduced time of the curing cycle—a shorter period between production and delivery.

. . . less danger of blocks freezing in winter after removal from curing room to yard.

. . . throw-backs are negligible and number of culls is reduced."

Whether you make special or standard units, Lehigh Early Strength Cement will help you save time and cut costs. Our Service Department will be glad to help you with your specific problems.

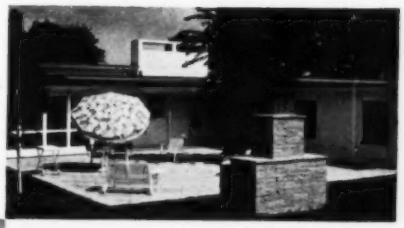
LEHIGH PORTLAND CEMENT COMPANY

ALLENTOWN, PA. • CHICAGO, ILL. • SPOKANE, WASH.

LEHIGH PORTLAND CEMENT · LEHIGH EARLY STRENGTH CEMENT
LEHIGH AIR-ENTRAINING CEMENT · LEHIGH MORTAR CEMENT

Storage yard of Irions' Concrete Block Co., Chillicothe, Ill., showing some of the many types of units manufactured.

LEHIGH CEMENTS



Front and rear views of home of Mr. Jacob H. Irions. Construction throughout is of concrete units.

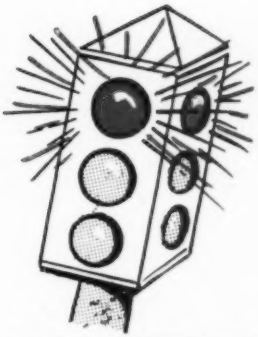
Soffit filler tile for roof.
Celocrete blocks for all walls.
Precast concrete sills and lintels.
Split Rock blocks for patio.
Split Rock units for outdoor fireplace and retaining wall around tree.
Lehigh Mortar Cement for all masonry.

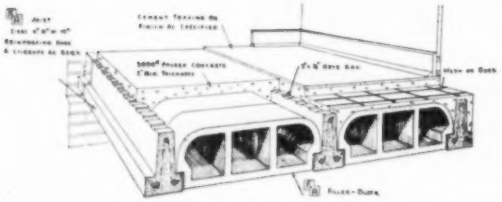
F&A

LABORATORIES HAS GIVEN US THE

GREEN LIGHT

TO CLOSE IN ALL OPEN TERRITORIES IN THE CONTINENTAL UNITED STATES





F & A PRECAST CONCRETE FLOOR AND ROOF SYSTEM

You can qualify for exclusive rights in your trade area if you are financially sound and have a reputation for making quality concrete products and giving service.

OUR CONVENTION HEADQUARTERS — HOTEL NEW YORKER

ROY DARDEN INDUSTRIES, INC.
P. O. BOX 95, NORTHSIDE STATION
ATLANTA, GA.

EXCLUSIVE DISTRIBUTORS
F&A FLOOR & ROOF SYSTEM EQUIPMENT
COMPLETE CONCRETE BLOCK PLANT EQUIPMENT

CABLE ADDRESS: "DARDEN"

how white is white?

Use Trinity white—the *whitest* white cement. Trinity white is a true portland cement. It meets all Federal and ASTM specifications. Use Trinity white for architectural concrete units, terrazzo, stucco, paint, ornamental work, tile setting, etc. Ask for it by its full name Trinity white.

Trinity Division, General Portland Cement Co., 111 W. Monroe St., Chicago, Republic Bank Bldg., Dallas; 816 W. 5th St., Los Angeles.

"...Mary had a little lamb, its fleece was white as snow..."
Sarah Hale

Trinity White!

PORTLAND CEMENT

Now CLIPPER Gives You A NEW CONVERTIBLE MASONRY SAW!

Here's How . . .

FIRST YOU BUY A CLIPPER MASONRY SAW

and THEN YOU ADD . . . the "CONVERTIBLE" CART

THEN USE YOUR CLIPPER "4" WAYS

① Use as a DUSTLESS Masonry Saw

② Use as a DRY Masonry Saw

③ Slip the head from your Clipper Masonry Saw into the "CONVERTIBLE" CART and you have a Handy Concrete Saw.

④ Place it in tracks and you can cut large stone slabs or transite sheets

MODEL HD
9 models from $265

GREATER JOB PROFITS THAN EVER BEFORE!

. . . at any time the cutting head of your Model HD Clipper Masonry Saw can be placed on the "CONVERTIBLE" CART (that's all you do)—you're then ready to saw concrete or asphalt patches or trenches! Imagine...switching from cutting glazed tile, concrete, face brick to sewer, water or gas lines or floor patches. No more fractures beyond removal lines—no more spalling!

But there's more . . . just set the "CONVERTIBLE" CART on Tracks and operate as a TRACK SAW. Stone slabs, Transite sheets, Plywood, Masonite, Pre-Cast Stone and large Refractories can at last be easily cut.

Try This Combination on FREE TRIAL

Order TODAY . . . on FREE TRIAL. Discover for yourself how Clipper will increase production . . . cut costs . . . increase profits. Only through the Clipper FREE TRIAL ARE you guaranteed . . . ACTUAL TEST on the JOB . . . FULL SATISFACTION . . . NO OBLIGATION! . . . If you prefer, order your Clipper Masonry Saw now . . . and the Clipper "Convertible" Cart when the need arises.

SELECT-A-NOTCH

● One man easily adjusts Cutting Head to desired height . . . Whether cutting 12" or 1" material. Operator's hands merely guide. Weight supported by rear Bar.

PRESSURE EQUALIZER

● Makes your blades last longer . . . Because Equalizer Spring automatically cushions blade pressure whether cutting HARD or SOFT materials. Outstanding for blade economy.

ADJUST-A-CUT CONTROL

● Pull the knob—and the Cutting Head is free for finger-tip setting at any desired angle. Release the Knob—and Head is locked in the desired position.

SAVE-A-BLADE DIAL

● Just turn the Save-A-Blade Dial to the material hardness and the Pressure Equalizer Spring automatically sets the tension—guarantees faster cutting and longer blade life.

Clipper

KANSAS CITY 8, MISSOURI

"COAST-TO-COAST"

PITTSBURGH
ST. LOUIS
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GENUINE CLIPPER BLADES—ALL DIAMETERS

DRY-WET & B-R BLADES

DIAMOND BLADES

MAIL THE COUPON TODAY!

Serving the World as the World's Largest Manufacturer of Masonry Saws

CLIPPER MANUFACTURING COMPANY
2801 N. WARWICK • KANSAS CITY 8, MO.

Send FREE Information and Literature on:

☐ NEW CLIPPER MASONRY SAWS ☐ CLIPPER CONCRETE SAW
☐ DUSTLESS Model HD ☐ FREE TRIAL 89

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Advertising Rate Per Issue: $10.00 a Column Inch. Lower Rates on a Contract Basis — Write for Rate Card.

FOR SALE

or WILL CONTRACT FOR LARGE VOLUME CONCRETE JOB

20 or more TRUCK MIXERS

1950 Models — 4½ yd.

Hi-Discharge

Mounted on 6 x 4 truck

MATERIAL SERVICE CORPORATION
33 North La Salle Street, Chicago 2, Illinois

A SPLENDID OPPORTUNITY exists in a medium sized town in Michigan for a redi mix plant. It will pay you big dividends to investigate this opportunity if you now have a redi mix plant and are dissatisfied with your present operations, or if you contemplate going into the redi mix business. Plenty of good sand and gravel available. Write us for further details.

BOX NO. E 23, c/o Concrete Manufacturer
431 S. Dearborn St. Chicago 5, Ill.

WE WANT TO BUY a used 4-in. mold box, stripping pins and 6,000 steel pallets and a used 12-in. mold box, stripping pins and 2200 steel pallets for a Sterns-Joltcrete block machine No. 9, serial no. J-96.

Universal Concrete Pipe Company
297 S. High Street, Columbus, Ohio

WANTED

Used fully automatic 2 or 3 block machine. State condition, price, year, make and location of machine.

Box No. E 28, c/o Concrete Manufacturer
431 So. Dearborn Street Chicago 5, Illinois

FOR SALE
Complete Block Plant Equipment

Ford Tamper Block Machine with 2 H.P. Electric Motor
Ford Mixer—7 Cu. Ft. complete with 7½ H.P. Electric Motor
Rubber belt Elevator complete with 2 H.P. Electric Motor
Conduit and all Switches
1600 Steel Pallets, Plain & Specials
6 Steel Pallet Racks
25 Steel Block Racks
Conco Electric Hoist
1 Truckman Power Lift Truck
1 Hand Lift Truck
1 Hand Brick Machine and Pallets
2 Steel Wheelbarrows—Rubber tires
1 Chimney Block Machine 16 x 20 and Pallets

Will sell at a very reasonable price.

HAUGER MASONRY & SUPPLY CO.
Post Office Box 421, Sterling, Illinois

FOR SALE

1—Besser Super Tamper.
1—Besser Victory Tamper.
1—Stearns Model A Clipper.
2—Besser 25 ft. Mixers.
2—Besser Offbearing Hoists.
Pallets, racks and mold boxes.

Plant now in active operation. Available in Jan.-Feb. 1952.

Priced to move.

FAIRMONT WALL PLASTER CO.
Fairmont, West Virginia
Phone: 1520

FOR SALE

1—CHICAGO PNEUMATIC AIR COMPRESSOR; Simplate Valve; Size 12 X 7 X 10 NCTB; Ser. No. 23106.
1—75 H.P. Gen. Elect. Motor; 3 Phase; 60 Cycle; 440 Volts; 865 R.P.M.; Type ITC 5013; Ser. No. 594168. Reduced voltage starter and all controls. Sheave and ten V-Belts.
15—9:00 X 24 Goodyear Hard Rock Lug Tires and Tubes; Fair and good condition; Sell by lot or separate.

Prices on request.

Box No. 363, c/o Pit and Quarry Publications
431 S. Dearborn St., Chicago 5, Illinois

FOR SALE
ROCK CRUSHING BUSINESS

Long lease, good equipment, all electric with Diesel engine standby.
1—New Holland Primary crusher.
1—Rogers hammermill 2—150 HP elect. 1—15 HP elect. 2—10 HP elect. 1—6 HP. 1—3½ HP electric motors.
1—70', 24" conveyor; 1—30"x40' conveyor
1—D7 Cat. Highloader; 1—315 cu. ft. Air comp.
1—Wagon Drill; 1—D6 Dozer. Oil House; Tool House; 20 Ton Scale; 2—4x10 three deck screens; concrete and steel rock and lime bins.
2—K7 IHC trucks; 2 Ton Chev. Dump truck.
1—IHC pick up truck. Tools and spare parts. All equipment in good condition.

Box No. 355, c/o PIT AND QUARRY
431 S. Dearborn St., Chicago 5, Ill.

READY-MIX PLANT AND COAL YARD FOR SALE

Located in county seat town in north-western Ohio. A high class, well organized business. Required capital and experience but will soon pay for itself. Latest equipment, marvelous territory. Owner retiring.

Box No. 367, c/o Concrete Manufacturer
431 South Dearborn Street, Chicago 5, Illinois

POSITION VACANT

Graduate Chemist or Chemical Engineer with a minimum of 5 years experience in cement plant control work needed to be Chief Chemist for one of our cement plants in the Great Lakes Region.

Our company has experienced excellent profits, and we believe our salary schedule is considerably higher than the industry average.

This vacancy represents a real opportunity for the right man.

State age, experience, references, and salary requirements. Write Box No. 253, c/o Pit and Quarry, 431 S. Dearborn St., Chicago 5, Illinois.
Our organization knows of this ad.

MANAGER

For Cinder Dept. of well known Eastern Firm. Unusual opportunity for man with engineering or building background. Must be capable of taking complete charge of administrative and sales work. Replies held in strict confidence. State age, salary desired, experience and date available.

Box No. 362, c/o Pit and Quarry Publications
431 So. Dearborn St., Chicago 5, Ill.

FOR SALE: BUSINESS

Agg. Lime and Fluxing Stone
126 Acre tract
55 Acre high calcium limestone
Plant now producing 500 tons per day

Box No. 352, c/o Pit and Quarry Publications
431 S. Dearborn Street Chicago 5, Illinois

FOR SALE

Kent 12 C. F. Mixer - 10 HP Motor	$ 350.00
Kent Elevator - 3 HP Motor	100.00
Set 3 Beam Wheelbarrow Scales	125.00
1948 Stearns Joltcrete No. 7	4,750.00
Air Operated Offbearer	400.00
4" x 12" Combination Mold Box	630.00
28 Cu. Ft. Besser Mixer & Skip Hoist	2,000.00
Hough Pay Loader Model HA	1,750.00
25 HP Automatic Gas Boiler	1,800.00
2 Hydraulic Lift Trucks	200.00
3,000 Std. 8 x 8 x 16 P.S. Pallets - BABA	1,350.00
53 Steel Racks @ $15 Each	795.00
575 Sash End 8 x 8 x 16 P.S. Pallets - BATON	287.50
150 Dble. End 8 x 8 x 16 P.S. Pallets - BALM	75.00
2,400 - 4 x 8 x 16 P.S. Pallets	960.00
1,000 Standard 12 x 8 x 16 P.S. Pallets	800.00
300 Sash-End 12 x 8 x 16 P.S. Pallets	270.00
	$16,642.50

All of the above equipment is in first class operating condition. Reason for selling, replacing with larger equipment.

ATLAS CONCRETE PRODUCTS CO.
Mt. Sterling, Kentucky **Phone 58**

FOR SALE

3—Jaeger Truck Mixer 2 yd., with trucks
1—95 ton B-K all steel bin with scale & batcher
1—9B2 McK.-Terry steam hammer
1—11B2 McK-Terry steam hammer with leads and Hose
1—CMC 2 compartment Bin-a-batch on rubber
1—Mpls. Moline tractor with lull loader with all attachments
1—3 Drum gas hoist with swinger 70 H.P.

CHAS. H. HOGAN
4536 Colfax Avenue S.
Minneapolis 9, Minnesota

CEMENT COLORS

Write for free samples and prices of "LAMICO" CEMENT COLORS produced in 24 attractive shades. Packed in bulk and in 1 lb. and 5 lb. packages.

manufactured by
LANDERS-SEGAL COLOR CO.
71 Delevan St. Brooklyn 31, N. Y.

FOR SALE

1400—8" P. S. Pallets, including 400 corner & sash—$600. 1000—12" P. S. Pallets $800. Price for Lot—$1100. OILED DAILY—LIKE NEW.

THAMES BLOCK COMPANY
UNCASVILLE **CONNECTICUT**

WANTED

J & C 6 Pocket Brick Press

Box No. 454, c/o Concrete Manufacturer
431 South Dearborn St. Chicago 5, Illinois

WANTED

Concrete pipe cast type molds suitable for rubber gaskets. Diameters 12 inches to 120 inches. New or used.

Box No. 559, c/o Concrete Manufacturer
431 S. Dearborn St., Chicago 5, Illinois

BESSER SUPER VIBRAPAC PLANT FOR SALE

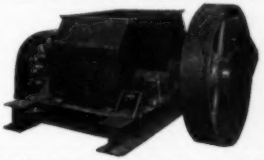
Progressive City of almost one million population. Large Backing booked at high prices. Wonderful earning record. Walkout proposition. $100,000 will handle. Owners have other interests.

BOX NO. 452, c/o The Concrete Manufacturer
431 South Dearborn Street **Chicago 5, Illinois**

CRUSHERS - VIBRATING SCREENS
CONVEYORS - SCALES - FEEDERS - IDLERS

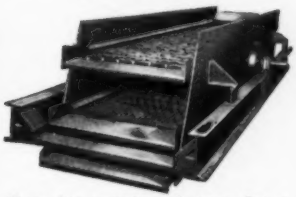
GUARANTEED EQUIPMENT — IMMEDIATE SHIPMENT

CINDER, PUMICE, PERLITE CRUSHERS



10 to 20 tons per hour capacity....$ 479.00
25 to 50 tons per hour capacity.... 1144.00
Complete with hopper

VIBRATING SCREENS

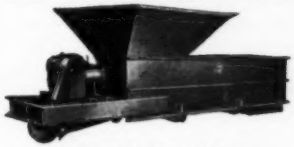


Heavy duty eccentric shaft types. One to five decks. Screening sizes from 3'x8' to 5'x14'. Priced from.....$1573.00

Screen cloth or plate included. Many smaller machines in stock. Screen cloth included. Prices start at $479.00.

Big Stock of cloth and plates.
Send us your want list.

HEAVY DUTY PLATE AND PAN FEEDERS



Complete with motor and drive.
15 to 35 ton per hour capacity.....$ 423.00
25 to 50 ton per hour capacity..... 552.00
50 to 100 ton per hour capacity..... 1437.00
100 to 175 ton per hour capacity..... 1935.00

TRUCK SCALES

15 Ton Truck Scales.....$545.00
20 Ton Truck Scales..... 617.00
26 Ton Truck Scales..... 684.00

Other scales of 50 ton capacity. All truck scales complete with structural steel weighbridge. Replacement parts for most all makes of scales.

BONDED HAS GUARANTEED EQUIPMENT FOR QUARRIES, SAND & GRAVEL PRODUCERS, LIME PLANTS, LIGHTWEIGHT AGGREGATE AND CLAY-PRODUCTS PROCESSING. WE ALSO EQUIP CEMENT PLANTS & BLOCK MANUFACTURERS

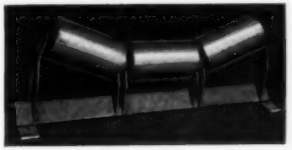
CONVEYORS & CONVEYOR PARTS

Troughing idler conveyors. Any length, belt widths to 60".
Prices from $435.00

Flat belt type bulk material conveyors. Any length, belt widths to 48".
Prices from $726.00

BUILD YOUR OWN CONVEYORS

We have standard sections, head and tail pulleys, take-ups, drives, idlers, speed reducers, sheaves, belting, etc.



3-roll Troughing Idlers for these sizes:

14" belt	$22.00	24" belt	$25.00
16" belt	23.00	30" belt	26.00
18" belt	24.00	36" belt	27.00
42" belt	$28.00		

1-roll Return Idlers for these sizes:

24" belt	$10.00	36" belt	$11.50
30" belt	11.00	42" belt	1250
48" belt	$13.50		

All steel. Interchangeable with other well-known makes. Replaceable ball bearings. No bearing adjustments required. Easy to start and will run in cold weather. Rust-proof ball races; maintenance is negligible.

PORTABLE CONVEYORS

Several in stock. Various widths and lengths in troughed belt, flat belt, and flight types. Gasoline and electric power. Some as low as $450.00.

HEAVY DUTY FLIGHT CONVEYORS

For high-temperature conveying as well as normal work. For lime and cement plants, kilns, lightweight aggregate furnaces.

Any length. Flights up to 8" x 24". All welded structural and sheet steel. Heavy duty, double guided chain.

Priced from $571.00

SAVE WITH "ECONOMY-TYPE" IDLERS

"Spool Idler" economy conveyors for lighter loads of cinders, gravel, stone, wet concrete. Very low price.

More than 3000 mines and quarries have modernized with Bonded equipment.

BONDED SCALE AND MACHINE COMPANY
PHONES: GArfield 2186; FRanklin 6-8898, Evenings.
110 Bellview **Columbus 7, Ohio**

CONCRETE MANUFACTURER CLASSIFIED SECTION

FOR SALE

Complete Block Plant Equipment at sacrifice Price.
Equipment can be seen in operation.
Must install larger production machinery to supply demand.
1—O.K. Block Machine with vibrator & pressure head. Capacity, 240—8 x 8 x 16 block per hour or equivalent.
2—12 cubic ft. mixers with motors
2—12 foot drag elevators with motors
1—Block stacker complete with offbearer and basket
1— 8" mold box
1—12" mold box
1— 4" mold box
1— 8" silo block mold box
1—Septic tank & dry well mold box
Complete accessories for Bull Nose & Jamb block
2200— 8" Cast Alum. Pallets
2000—12" Cast Iron Pallets
2000— 4" Cast Alum. Pallets
2000— 8" Cast Alum. Silo Pallets
2000— 4" Cast Alum. Septic tank Pallets
500— 8" Bull Nose Pallets
275— 8" Corner Pallets
50—Steel Racks
2 Barrett Lift trucks

SPOONER CONCRETE PRODUCTS
Spooner, Wisconsin

SPACE HEATERS

War Surplus Bargain

New — Ready To Use!

40,000 BTU capacity

—Burning gasoline, kerosene or diesel fuel.

—Electric blower—12 V. DC or 110 V. AC using small transformer which we furnish with each heater.

Portable, Quick, Clean Heat

Ideal for curing room, concrete plants, work under construction, emergency heat, or auxiliary heaters.

$95.00 each

Clapp, Riley and Hall Co.
14 No. Clinton St.,
Chicago 6, Illinois

PACKER-HEAD WINGS

Both McCracken Type and Martin Trowelers—PROVED to last as long or longer — yet cost considerably less. Write for prices.

TEXAS FOUNDRIES
LUFKIN, TEXAS

100,000 PRESSED STEEL PALLETS In Stock

Send tracing or pallet for quotation.

GENERAL CONCRETE EQUIPMENT CO.
307 Hunter Street
Dept. PQ
Gloucester, New Jersey

FOR SALE

One Stearns #7 Joltcrete Block Machine with 4", 8" mold boxes. 4,900 8" pallets including pilaster, bull-nose, corner and sash, 4,400 4" pallets, also enough steel racks for these pallets.

Salina Concrete Products, Inc.
Box 148, Salina, Kansas, Phone 5437

Announcement

COLE'S BLOCK COOKER

For the small 1000 or less plant. A portable, sturdy and durable oil-burning cooker producing super-hot, moisture saturated air which is blasted into your kilns through a powerful blower.
Produce 1000 per day of Grade A steam cured blocks at a curing cost of less than ¼c per block.
Also an excellent dry heat unit for warming plant and machinery.

Write for details

A. J. Cole Co., Chillicothe, Mo.

FOR SALE

One—Besser Vibra-Pac, with 4" mold box, 6" mold box, 8" mold box, 12" mold box, 8x8 chimney block attachment, 8x12 chimney block attachment,
one—30 Cu. Ft. Mixer with motor,
one—Offbearer Hoist, no compressor,
one—Pallet oil spray attachment.

Also supply of new and unused Besser parts.
All equipment in very good condition.

Phil Oram
4119 W. 74th Terrace, Mission, Kansas
Phone: Gilmore 9780

FOR SALE

2 Rockercrete Block Machines Vibrating Type complete with compression head block, and tandem feed hoppers, flight conveyor.
4 mold boxes for 4" and 8" blocks. 4500 8" cored pallets, 2500 4" and 650 slotted jamb and lintel pallets. 80 Steel Racks 4 tier 48 block capacity with steel shelves. All in excellent condition. We need the space; will sell at fraction of cost.

MIRACLE BLOCK CORPORATION
Route 10, Box 45, Houston, Texas

FOR SALE

38 Steel Racks—36 blocks to a rack.
1368 plain steel pallets—12¼" x 18".
Also—One Besser K-12 block machine, complete with molds for 4, 8, 10 & 12" blocks.
Also—A Mold for rock face blocks—Mixer included.

JOHN WITTENBURG
815 S. Whittaker Ave. New Buffalo, Mich.

MINERAL COLORS for BRICK MORTAR STUCCO-PLASTER-CONCRETE

"Fine Because of Their Fineness"
Ask for samples and recommendations.

BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

FOR SALE

1 Dunbrik machine, in good condition.
1 16 cu. foot mixer recently overhauled.
31 racks (each rack holds 720 brick). 20 of these racks are in fair condition. 11 are in poor condition but we have some repair parts to fix them up.
7500 steel pallets in excellent condition.
Approx. $300 worth of repair parts.
Elevator shaft and bucket batcher.
All motors necessary to run this equipment.

We would like to sell the above equipment as a unit. Above equipment is 4 years old. Priced for quick sale.

On this machine you can make the following units:
2¼ x 4 x 8
2¼ x 8 x 8
2¼ x 12 x 8

TIFTON BRICK & BLOCK COMPANY
Tifton, Georgia

WANTED

New or slightly used ¾ Yard Clam Shell Material Bucket: — Preferably Blaw Knox.

W. J. BREMER
READY MIXED CONCRETE
P. O. BOX 605 SAVANNAH, GEORGIA

UNBREAKABLE PALLET RINGS

Write for full information

TEXAS FOUNDRIES
LUFKIN, TEXAS

FOR SALE

Available by March, 60 block cars and 24 gauge track in excellent condition. These are 72-8" block per car, three compartment type adaptable for one, two or three 8" block at a time. See these cars in service now.

WILLBEE CONCRETE PRODUCTS CO.
JACKSON Phone 2-9493 MICHIGAN

FOR SALE

Late model #9 Joltcrete with power off bearer; 4, 8, 12 and Flue block mold boxes, pallets, racks, turntables, air compressor and other equipment, all in good condition.
Priced to Sell

Baldauf & Schlientz, Inc.
159 N. Greenwood St. Marion, Ohio

TRUCK MIXERS

Jaeger and Ransome 2 yard 2 years old—excellent condition—half price.

AMERICAN CONCRETE SERVICE
Hamilton, Ohio

CLEAN

1—Model 9 Joltcrete with rebuilt guarantee including Modular 8 inch attachment
3,000 NEW Modular size 8" steel pallets Code Cake
1—50 cubic foot Mixer with direct V belt motor drive

THOMAS W. NOBLE CO., INC.
520 North Michigan Ave. Chicago 11, Illinois

FOR SALE
INTERLOCKING BLOCK MACHINE

One Vibrated Hydraulic Powered Machine. Single mold (Hydraulic Tank & Pump). Makes standard 8" & Interlocking Blocks.
1,000 Interlocking Pallets.
1,000 Standard Pallets (reg., corner & rash).
Racks.

Contact: COWAN CONCRETE PRODUCTS
625 Third Street Greeley, Colorado

ASPHALT PLANT FOR SALE

COMPLETE PLANT INCLUDING POWER UNITS WITH
5000 LB. BATCH MIXER

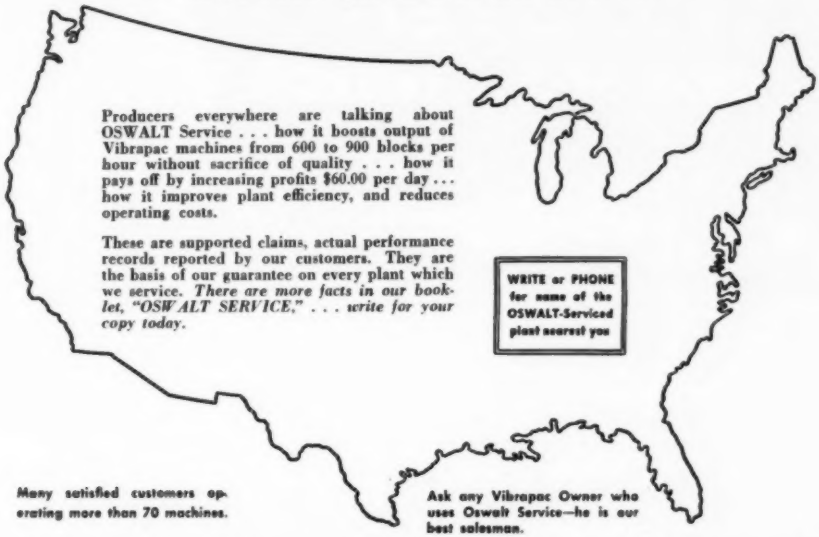
Plant now in operation. Invite inspection. Delivery upon completion of current contract.

Will dismantle and load at cost if desired.

Box No. 457, c/o Pit and Quarry
431 South Dearborn St., Chicago 5, Ill.

There's an **OSWALT-SERVICED** Plant near You

...wherever you are in the U. S. A.



Producers everywhere are talking about OSWALT Service . . . how it boosts output of Vibrapac machines from 600 to 900 blocks per hour without sacrifice of quality . . . how it pays off by increasing profits $60.00 per day . . . how it improves plant efficiency, and reduces operating costs.

These are supported claims, actual performance records reported by our customers. They are the basis of our guarantee on every plant which we service. *There are more facts in our booklet, "OSWALT SERVICE," . . . write for your copy today.*

WRITE or PHONE for name of the OSWALT-Serviced plant nearest you

Many satisfied customers operating more than 70 machines.

Ask any Vibrapac Owner who uses Oswalt Service—he is our best salesman.

OSWALT ENGINEERING SERVICE CORP. 1335 CIRCLE AVENUE, FOREST PARK, ILLINOIS
Phones: ESterbrook 8-3666.....FOrest 6-3898

Are Increasing the Profits from **LINTELATORS**

SUPER LINTELATORS
Make lintels 7⅝" HIGH by 3⅝" 5⅝" 7⅝" 9⅝" 11⅝" WIDE in these lengths.

S 6	2'8" up to 6'
S 7	2'8" up to 7'4"
S 8	2'8" up to 8'8"
S 9	2'8" up to 9'4"
S10	2'8" up to 10'8"

STANDARD LINTELATORS
Make lintels 7⅝" HIGH by 3⅝" 5⅝" 7⅝" WIDE in these lengths.

No. 6	2'8" up to 6'
No. 7	2'8" up to 7'4"
No. 8	2'8" up to 8'8"
No. 9	2'8" up to 9'4"
No. 10	2'8" up to 10'8"

Yes, in addition to lintels in various lengths and sizes, concrete sills are being made rapidly and profitably on KENT Lintelators. And, in some instances, fence posts are also being produced.

But isn't this a logical development. Since builders "go for" concrete lintels with their block-like texture, their simple and cost saving installation, why shouldn't they buy matching concrete sills?

Experience has proved that they do buy them, opening still another market for sales and profits.

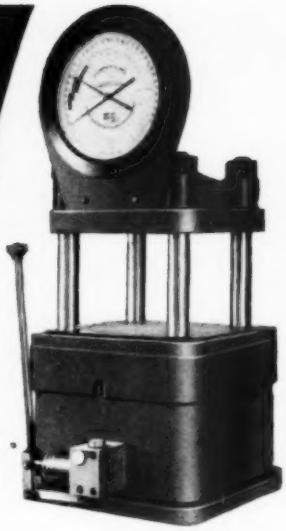
Do you know the Lintelator story? If you don't, you should!

Lintelators are available with special Kent motor driven mechanical vibrators which eliminate noise and require no air.

The **KENT MACHINE CO.**
CUYAHOGA FALLS, OHIO
Manufacturers of
CONCRETE PRODUCTS MACHINERY SINCE 1925

the FORNEY Compression TESTER

Sells Your Products...Increases Your Profits!



Equipped with the Forney Direct Reading Gauge

● If you manufacture Concrete — *you* need a FORNEY Compression Tester.

Producers of Concrete building units, concrete products or concrete in any form will find that daily tests can substantially increase yields. Such variables as cement content, aggregate, mixing, curing, molding and segregation can be controlled.

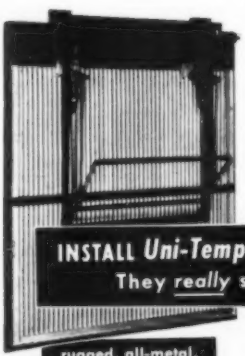
Daily Testing creates customer confidence in your products.

Write For Full Information

FORNEY'S, Inc.
203 ELM STREET
NEW CASTLE, PENNSYLVANIA

Cure *better* block— at *lower* cost!

by stopping costly losses of heat and steam through kiln doors or covers that don't *really* seal and insulate. Your cost per block goes *down* when you stop pouring fuel $$$$$ into the open air. And you get *better block* too—because you get more uniform curing conditions throughout the kiln.



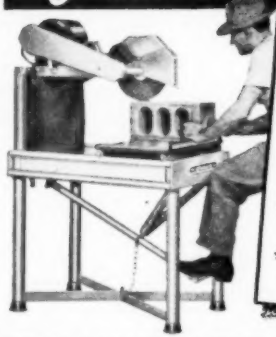
INSTALL *Uni-Temp* CURING ROOM DOORS
They *really* seal and insulate

rugged, all-metal, fully insulated!

Ask too about the *Universal* DOOR CARRIER
World-famous door handling equipment—since 1904

Write:
UNIVERSAL DOOR CARRIER, INC.
1117 Cornell Ave., Indianapolis 2, Ind.

THE *Valor* MASONRY SAW



For **MORE PROFIT PER CUT!**

- ★PRICED LOWER
- ★CUTS WET OR DRY
- ★CUTS ALL MASONRY MATERIALS
- ★IT'S PORTABLE, ONLY 225 LBS.
- ★SAFE AND EASY TO OPERATE

THERE'S A VALOR FOR EVERY PURSE AND PURPOSE

Built for Speed, Economy and Accuracy, the VALOR is the greatest value in masonry saws today . . . Its light weight, plus 9 second head removal, make it really portable. The Feedmatic principle automatically controls blade pressure. The long head-throw eliminates the need for changing head positions for varying material heights. The rugged tube and $1/4$" angle construction is backed by dual foot pedal springs, wobble-proof cart, trouble free self-priming pump and cadmium plated parts.

SEE YOUR DEALER TODAY!

Victor ENGINEERING CORPORATION
27 Maplewood Ave., Philadelphia 44, Pa.

Erickson

the WORKHORSE of LIFT TRUCKS

"Gives Your Business a Lift"

Erickson "Custom-Built" F-5 with additional lift. Dual heavy duty tires for soft yards. Capacity 5000 lbs.

Every Truck "Custom-Built" . . . for the Customer's Needs

Erickson Model F-5 (Capacity 5000 lbs.) shown with detachable scoop. Fits any Erickson fork model.

Erickson Model F-6 with standard wheels, forks and lift. Capacity 6000 lbs.

We'll be looking for you at the

N.C.M.A. CONVENTION

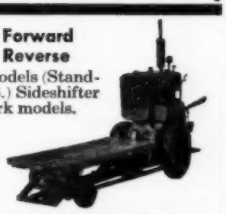
New York, February 18-20, 1952

4 Speeds Forward
Speeds Reverse

available on all models (Standard on F10 & F16.) Sideshifter optional on all fork models.

Erickson Model F-16

Capacity 16,000 lbs. Shown with boom attachment and utility forks for your pipe work. Supplied with any style forks. Other pipe handling models with 6000, 8000 and 10,000 lbs. capacity.



Erickson Platforms

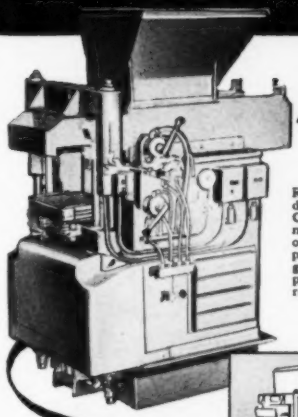
Model P-5, 5000 lbs.
Model P-6, 6000 lbs.
Model P-7, 7000 lbs.
Handle all racks.

Erickson
POWER LIFT TRUCKS, Inc.

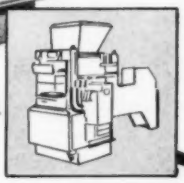
1403 MARSHALL ST. N. E.
MINNEAPOLIS 13, MINN.

HIGHEST QUALITY BLOCKS . . .
LOW INITIAL INVESTMENT

Columbia
"BASIC" Block Machine



Rugged, versatile design, the Columbia Basic meets every need of the small producer and will grow with production requirements!



ADD PALLET FEEDER AND FEED DRAWER AGITATOR

. . . when demand requires higher production, just add pallet feeder and feed drawer agitator to speed up production, keep pace with sales!

ADD AUTOMATIC CONTROLS AND PALLET CLEANER

. . . and your Columbia Basic becomes a most modern, fully automatic, electronic controlled block maker! The Basic truly grows with production requirements!

THE COLUMBIA BASIC INCREASES IN VALUE AS BLOCK PRODUCTION GROWS!

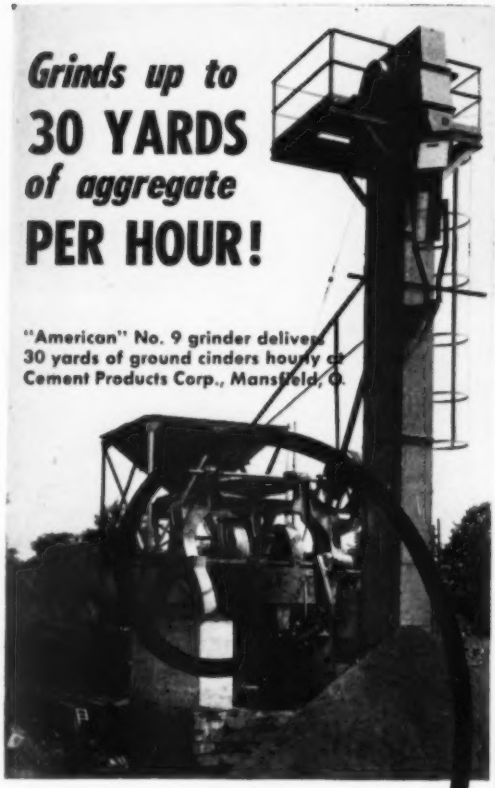
As more production capacity is needed, you can add a pallet feeder, feed drawer agitator, automatic controls and pallet cleaner! Each addition speeds production . . . increases the machine's value as a block producer and profit maker for you! Use the same basic Columbia from manual operation to fully automatic! Keep abreast of your block production with a Columbia Basic and you'll keep abreast of the block making industry!

Write home office for name and address of sales representative in your area.

Columbia MACHINE WORKS

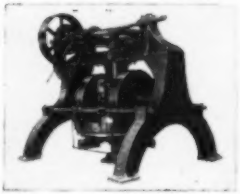
107 S. GRAND AVE. VANCOUVER, WASH.

Grinds up to
30 YARDS
of aggregate
PER HOUR!



"American" No. 9 grinder delivers 30 yards of ground cinders hourly at Cement Products Corp., Mansfield, O.

HERE'S WHY AN *American* GRINDER IS THE *RIGHT* GRINDER FOR YOUR PLANT . . .



- Needs no screen plates
- Handles material wet or dry
- Adjustable to your volume and size requirements
- Requires only minimum maintenance
- Has low power consumption
- Good for years of trouble-free operation

YOU CAN'T BEAT AN "AMERICAN" FOR GRINDING

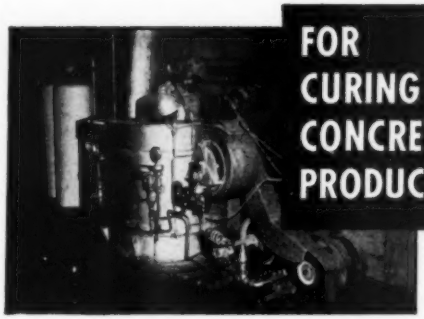
- **CINDERS**
- **HAYDITE**
- **PUMICE**
- **SLAG**

and a wide range of quarry and mine products.

If accurate grinding, in volume, poses a problem in your plant . . . ask for a non-obligating consultation with the "American" grinding specialist . . . write, wire or phone.

***American* GRINDERS**

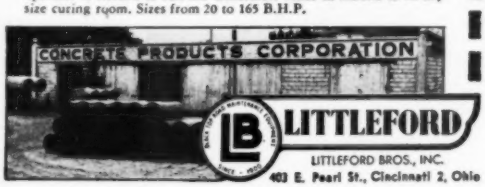
W. A. RIDDELL CORP., BUCYRUS, OHIO



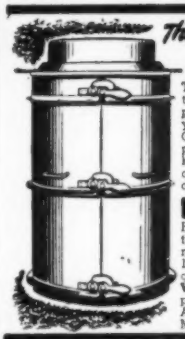
FOR CURING CONCRETE PRODUCTS

LITTLEFORD "Kwik-Steam" Vapor Generators

Curing of Concrete Products now can be done at the minimum of cost by using a Littleford "Kwik-Steam" Vapor Generator. These small, compact units are the fastest steam producing generators ever designed. They will produce steam in 2 minutes time from a cold start, are low cost in operation as they burn fuel oil and only produce steam when steam is needed. The "Kwik-Steam" Generators are completely automatic; no special trained operator is needed to run the Generator. Made in models to fit any size curing room. Sizes from 20 to 165 B.H.P.



LITTLEFORD BROS., INC.
403 E. Pearl St., Cincinnati 2, Ohio



The "Quinn Standard"
FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost. **WRITE TODAY.** Complete information, prices, and estimates sent on request. Also manufacturers QUINN CONCRETE PIPE MACHINES.

QUINN WIRE & IRON WORKS 1627 12TH ST. BOONE, IOWA

NOW MORE THAN 120 LICENSED MANUFACTURERS Producing

Patented
homeward *Concrete* STEPS
A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

The exclusive franchise for your territory may still be open.
For Complete Information Write
ROGER F. WILLIAMS, Licensor
3420 S. W. 9th St. Des Moines (15), Ia.

MAKE PROFITABLE IMPROVEMENTS Better—with CONCRETE
HOW TO GET A CONCRETE HOUSE
. . . and what will it cost?
Phone a local concrete masonry manufacturer for names of architects and builders experienced in concrete house construction. They know local conditions and can tell you about plans and costs. Take your plans or sketches to an architect. Have him show you how your home—of any size, style or floor plan—can be economically built with concrete walls, subfloors and fireafe roof.
Architect-Designed Houses Stay Young Longer

Make Your Plant the Headquarters for CONCRETE MASONRY CONSTRUCTION

Every month Portland Cement Association advertisements in America's leading home and farm magazines carry sales messages telling millions of prospective buyers about the advantages of concrete masonry construction. Most of these advertisements include a special message like the ones above—advising the prospective customer to call on you, the local concrete masonry manufacturer, for names of builders, engineers or architects familiar with concrete masonry construction.

This advertising helps identify your plant as the headquarters for concrete masonry construction in your community. Giving prospects information about concrete masonry construction and referring them to local architects and contractors who design and build quality concrete masonry structures is one of the best ways to protect your present business and to ensure your future markets.

PORTLAND CEMENT ASSOCIATION

33 W. Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

with truck-man!"

And that's not hay! That's what block plant operators across the country tell us they save with this economical, rugged truck. One man's time . . . every day . . . the whole year 'round . . . *that* adds up!

You save up to $300.00 and more during the first month you put Truck-Man to work in your block or brick yard . . . and you continue to save at that rate during years of faithful, dependable Truck-Man service.

Truck-Man is a light, speedy, highly maneuverable truck that works a shift on little more than a gallon of gas . . . requires minimum maintenance . . . has simple controls any worker quickly learns to operate. The special 62" platform handles even 72 block racks . . . those extra big loads that mean more profit per trip between block machine and curing room. Various platform heights, widths and lengths available to suit your operation.

There's an extra dividend for you, too, in the gentle treatment your blocks get. Truck-Man's easy hydraulic lift and drop, soft *start* and *stop*, and rubber-cushioned ride spot your racks gently . . . no costly checking of green blocks to eat up profits.

New 1952 catalog describes FOUR low-cost Truck-Man models. You owe it to yourself to get the whole story on this money-maker. Coupon brings your copy, at no obligation. Mail it now. Sales and service in 95 centers across the nation!

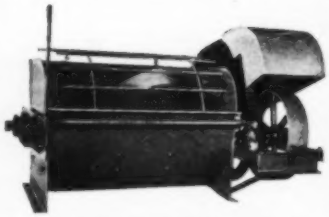
truck-man Div. of The KNICKERBOCKER CO.
871 LIBERTY ST. • JACKSON, MICH.

NAME _____ TITLE _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

PRASCHAK MIXERS



8 Cu. ft. **$495.00**

16 Cu. ft. **$660.00**

21 Cu. ft. **$740.00**

30 Cu. ft. **$960.00**

THE MIXER THAT CAN TAKE IT

We also manufacture

Block Machines, Conveyors, Cinder Crushers, Lift Trucks, Silo Stave Equipment, Cup Elevators, Rotary Screens

PROMPT DELIVERY

Write for New Cat. No. 50-2

PRASCHAK MACHINE CO.

MARSHFIELD WISCONSIN

Meeting Load Limitations *with* High Capacity at LOW COST!

Hi-LO TRUCK MIXER

Ask the Fleet Owners. Names on Request.

HI-LO Jr. and HI-LO Models

HI-LO Jr. ***with VISIBLE MIXING***

Carries up to 3 cu. yds. of mixed concrete on a single axle truck . . . and not exceed the single axle weight limitation of 18,000 pounds which prevails in many states.

NEW BULLETIN MAILED ON REQUEST

CONCRETE TRANSPORT MIXER CO.

Phone Flanders 7800

4989 FYLER AVE. • ST. LOUIS 9, MO.

Serving the CONCRETE-INDUSTRY 20 YEARS

COLORS

SYNTHETIC CONCENTRATED

RED

YELLOW **BLUE**

GREEN **BROWN**

BLACK

Color Card on Request

REICHARD-COULSTON, Inc.

15 E. 26th St., New York 10, N. Y. Factory Bethlehem, Pa.

Faster { POURING / STRIPPING / HANDLING / RESETTING } **. . . that's Carpenter**

SEPTIC TANK FORMS AND HANDLING EQUIPMENT

Write for full details

Concrete producers from coast to coast choose Carpenter Equipment for high output of a top quality product, and bigger profits. Using the Carpenter Powered Delivery Rig, one man can load, transport, and set tank in hole.

CARPENTER MANUFACTURING CO.

Phone 22018 — R.F.D. No. 1, Box 470, Richmond, Virginia

CONCRETE MANUFACTURER

RESEARCH DEPARTMENT

431 South Dearborn St. Chicago 5, Illinois

Please send me catalogs and prices concerning the following items checked below:

- ☐ Admixtures
- ☐ Air Compressors
- ☐ Air Entraining Agents
- ☐ Autoclaves
- ☐ Bag Cleaners
- ☐ Batchers
- ☐ Batching Plants
- ☐ Belting (Rubber)
- ☐ Bin Gates
- ☐ Bin Level Controls
- ☐ Bins and Batching Equipment
- ☐ Blades, Masonry Saw
- ☐ Block and Brick Machine
- ☐ Boilers
- ☐ Bucket Loaders
- ☐ Buckets, Concrete
- ☐ Buckets, Elevators
- ☐ Buggies, Concrete
- ☐ Bulk Cement Handling Equipment
- ☐ Bulk Cement Storage Plants
- ☐ Calcium Chloride
- ☐ Car Pullers
- ☐ Colors, Cement and Mortar
- ☐ Conveyors, Belt
- ☐ Conveyors, Portable
- ☐ Conveyors, Screw
- ☐ Curing Agents
- ☐ Curing Equipment
- ☐ Cutters, Bar
- ☐ Dispersing Agents
- ☐ Flooring Systems
- ☐ Forms, (Pipe, Joist, Ornamental, etc.)
- ☐ Guns, Color Spray
- ☐ Hardening Agents
- ☐ Heaters, Concrete Mixer
- ☐ Hoisting Equipment, Concrete
- ☐ Hoppers
- ☐ Joist & Slab Machines
- ☐ Kilns, Curing Concrete
- ☐ Lift Trucks, Electric
- ☐ Lift Trucks, Gasoline
- ☐ Lift Trucks, Hand
- ☐ Lightweight Aggregates
- ☐ Meters, Entrained Air
- ☐ Meters, Water
- ☐ Meters, Sand Moisture
- ☐ Mixers, Concrete (Batch)
- ☐ Mixers, Concrete (Continuous)
- ☐ Mixers, Truck
- ☐ Mixing Plants, Central
- ☐ Molds, (Pipe, Joist, Ornamental, etc.)
- ☐ Off-Bearers
- ☐ Paints & Coatings, Concrete
- ☐ Pallets
- ☐ Pipe Machines
- ☐ Pumps, Concrete
- ☐ Racks, Curing (Concrete Masonry)
- ☐ Recorders, Concrete Batching
- ☐ Regulators, Temperature
- ☐ Reinforcing Equipment
- ☐ Sand-Lime Brick Machinery
- ☐ Saws, Masonry
- ☐ Scales
- ☐ Silo Stave Machines
- ☐ Silos, Storage
- ☐ Skip Hoists
- ☐ Skip Loaders
- ☐ Testing Equipment
- ☐ Tile Machines, Drain
- ☐ Tile Machines, Roofing
- ☐ Tractors
- ☐ Truck Bodies, Ready-Mixed Concrete, Non-Agitating
- ☐ Turntables
- ☐ Vibrators, Portable, Concrete
- ☐ Waterproofing & Dampproofing

FIRM NAME .....

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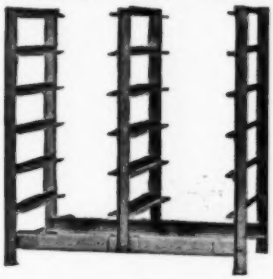
ADDRESS .....

CITY ..... STATE .....

CHASE BLOCK RACKS, CARS, PALLETS

Corrosion-Resistant Hi-Strength Alloy Steel



For Fork or Platform Lift Trucks

CHASE — THE LAST WORD IN
- DURABILITY
- ECONOMY
- EFFICIENCY

Sturdy construction
•
any style or capacity
•
Shipped knocked down
•
Rigid Field connections
•
assembled Easily

CHASE Foundry & Mfg. Co.
COLUMBUS 7, OHIO

DUR-O-WAL
TRUSSED

Design now available in Greater Supply!

Improved delivery schedules are now being maintained in the shipment of patented Dur-O-wal . . . the trussed design reinforcing member which gives masonry walls a backbone of steel.

Masonry walls reinforced with patented Dur-O-wal are built for lasting performance. Trussed design means permanent beauty, scientifically designed protection from cracks. Lays fast, economical, ideal for all masonry construction.

Cedar Rapids Block Company
Dur-O-wal Div., 655 12 Ave. SW
Cedar Rapids, Iowa

Dur-O-wal Products, Inc.
P. O. Box 628
Syracuse 1, New York

JONES COMPRESSION TESTING MACHINE
(Formerly Yoder)

often pays for itself in 3 to 4 months!

- Designed especially for use in Concrete Products and Ready Mixed Plants, this machine meets the essential requirements of the A.S.T.M. specifications for such machines.
- In many plants it has paid for itself in the first three or four months. By helping to develop more economical mixes, as well as to maintain greater uniformity, production cost has gone down, quality up.
- On-the-spot testing with facture examination help to quickly discover irregularities in proportioning, grading, molding, quality of aggregate, mixing and curing, and to apply the right remedy with the least delay and guesswork as to cause of trouble. Simple and safe to operate — full instructions with each machine.
  - Send for Bulletin, more fully explaining the advantages of doing your own testing with this inexpensive machine.
  - Also ask for Bulletin on the new *Jones Continuous Mixer*, incorporating non-clogging vibrating belt feeder and other important new features.

CONCRETE TESTING MACHINES • CONTINUOUS MIXERS

J. A. Jones CONCRETE MACHINERY CO.
108 HORNING ROAD • PITTSBURGH 34, PA.

Check these Features

- ✓ **Finger-tip single valve control for easy operation.**
- ✓ **Variable speed drive on hydraulic pump.**
- ✓ **Timken bearing-equipped turntable, grease-sealed for life, with automatic locking.**
- ✓ **Easily replaced packer shaft, mounted on lifetime Timken bearings, with oversize stuffing box to protect against sand and grit.**
- ✓ **V-Belt and chain drive throughout, with oversize Twin Disc clutches.**
- ✓ **Square drive shaft for greater strength and easily obtainable replacement.**
- ✓ **Fewer lubrication points, with only four points requiring daily lubrication.**
- ✓ **Makes 3 and 4 foot joints up to 18" Diameter. Quick change from one size to another.**

These are just a few of many outstanding features of Dixon Model "C" Hydraulic Pipe Machines . . . features that mean money in your pocket because they contribute to faster production, lower operating costs, better pipe and higher profits. Write today for complete information.

HOUSTON CONCRETE MACHINERY COMPANY

Plant: 6600 Washington Avenue

Office and Mailing Address: 116 Heights Blvd.

HOUSTON, TEXAS

Manufacturers of:

Dixon Pipe Machines
Pipe Bend Machines
Dixon Mixers

Dixon Conveyors
Off-Bearing Carts
Septic Tank Forms

INDEX TO CONCRETE MANUFACTURER SECTION ADVERTISING

Atlas Concrete Products Co. 277

Besser Manufacturing Co. 245, 246
Agency—Paulson, Gerlach & Assoc.
Baughman Mfg. Co. 264
Agency—Mace Advertising
Bonded Scale and Machine Co. 277
*Butler Bin Co. 267
Agency—Davis-Greene Corp.

Carpenter Mfg. Co. 284
Cedar Rapids Block Co. 285
Agency—Ambro Advertising
Chase Foundry & Mfg. Co. 285
Clapp, Riley and Hall Co. 278
Cleveland Vibrator Co. 163
Agency—R. C. Wellman & Assoc.
Clipper Manufacturing Co. 275
Agency—Potts-Turnbull Co.
Columbia Machine Works 281
Agency—Ray Carr Organization
Concrete Transport Mixer Co. 284
Agency—Christy Humburg Adv.
Cook Bros. Equipment Co. 269
Agency—Houston Adv. Service

Darden Industries, Inc., Roy 274
Agency—Richardson and Sanders
Dur-O-Wal Products, Inc. 285
Agency—Ambro Advertising

Erickson Power Lift Trucks, Inc. 281
Agency—Foulke Agency

Fanning-Schuett Engrg. Co. 270
Forney's, Inc. 280
Agency—Danford Studio

Hauger Masonry and Supply Co. 276
Houston Concrete Machy. Co. 286
Agency—W. L. Culver Adv. Service

Jones Concrete Machy. Co. 285
Agency—G. M. Basford Co.

*Kent Machine Co. 279
Agency—T. H. Ball & Sons

Lehigh Portland Cement Co. 273
Agency—Geare-Marston, Inc.
Lith-I-Bar Company 271
Agency—Lindeman Adv. Service
Littleford Bros., Inc. 282
Agency—Jaap-Orr Co.
Lone Star Cement Corp. 236
Agency—Cowan & Dengler, Inc.

Material Service Corp. 276
Agency—Carlson and Associates, Inc., D. J.
Multiplex Machinery Corp. 268
Agency—A. Hemsing

Olsen Corp., Gene 235
Agency—Fred P. Bingham, Technical Adv.
Oswalt Engrg. Service Corp. 279
Agency—Wamsley & Heer, Inc.

Portland Cement Assn. 283
Agency—Roche, Williams & Cleary, Inc.
Praschak Machine Co. 284

Quinn Wire & Iron Works 282
Agency—Lessing Adv. Co., Inc.

Reichard-Coulston, Inc. 284
Riddell Corp., W. A. 282
Agency—Harry M. Miller, Inc.

Schundler and Co., F. E. 265
Agency—The Biddle Co.
Smith Co., T. L. 272
Agency—Paulson-Gerlach and Assoc.
Spooner Concrete Products 278
Star Expansion Products Co. 266
Stearns Manufacturing Co. 288
Agency—Beeson-Reichert, Inc.
Supremix, Inc. 235
Agency—Fred P. Bingham, Technical Adv.

Tracto-Lift Co. 238
Agency—Merritt Owens, Adv. Agcy.
Transmission and Gear Co. 287
Agency—St. Clair, Adv.
Trinity Portland Cement Co. 274
Agency—Hamilton Adv., Inc.
Truck-Mac Div. of the Knickerbocker Co. 283
Agency—Fred P. Bingham

Universal Concrete Machy. Co. 266
Agency—Byer & Bowman, Adv.
Universal Door Carrier, Inc. 280
Agency—Jack A. Hunter, Adv.

Vento Steel Products Corp. 264
Agency—Melvin E. Hall, Adv. Agcy., Inc.
Victor Engineering Co. 280
Agency—J. C. Smudin, Adv.

Williams, Roger F. 282

*See also Detailed Information in 1951 Pit and Quarry HANDBOOK and Concrete Industries Yearbook

MEET THE CHAMPION

THE TRANSO LOAD CHAMPION

- 3 or 4½ yd. capacity
- Transo direct drive
- Planetary reversing type transmission
- Large water tank
- Floating suspension of mixer, transmission, and engine
- Low initial cost
- Lightest, most compact mixer on market
- Economical Ford Engine

The TRANSO LOAD CHAMPION is a real performer for all mixing jobs. Its TRANSO direct drive in combination with a planetary type reduction unit mounts directly to the mixer drum, making a sturdy, compact, lighter truck mixer. Gone are the costly, weight-consuming ring gears, sprockets, and drive chains. SMOOTH STARTING AND DISCHARGE REVERSING are assured with the planetary type reverse transmission and spring loaded clutches running in oil. Clutches are self adjusting. Shorter length and lighter weight, adds maneuverability and handling ease—permits a wider choice of lighter weight truck chassis. Powered with the rugged, economical Ford industrial engine, the LOAD CHAMPION assures you the dependability established by our "Deluxe" model.

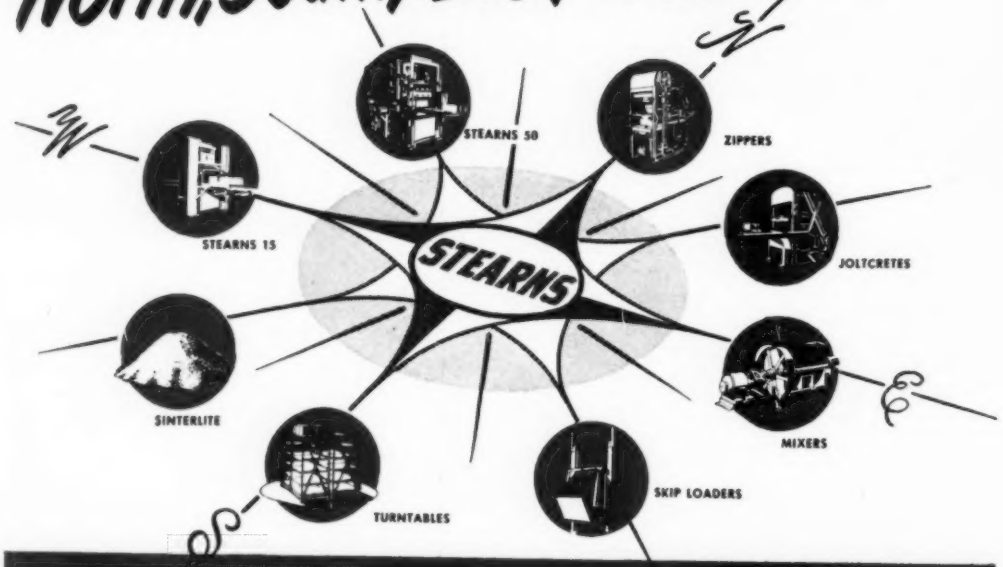
TRANSO **THE TRANSMISSION & GEAR CO.**

10421 HAGGERTY AVE. • DEARBORN, MICH.

20 YEARS' EXPERIENCE WORKING WITH THE TRUCK MIXER INDUSTRY

Look for the TRANSO LOAD CHAMPION and the DELUXE at the National Sand and Gravel Association Exposition, Booths 15 and 16, Feb. 11-15.

North, South, East, West . . .



PROFIT with Stearns

HIGH PRODUCTION • LOW COST • LARGE PROFITS

STEARNS ZIPPER

STEARNS 15

STEARNS 50

WE THANK OUR PATRONS FOR THE GREATEST YEAR IN STEARNS HISTORY. RECORD SALES SPEAK FOR THEMSELVES.

STEARNS

MANUFACTURING COMPANY • INC

ADRIAN • MICHIGAN

MODERNIZE WITH A STEARNS!

Toughness
Where It Counts...

From their sturdy mountings to their tough rock dippers, Bucyrus-Erie excavators match rough quarry work with the durability that means reliable performance shift after shift. Strong, simple main machinery puts power where you want it, when you want it for hard digging service. "Full-feel" controls give you the precise response you want for greatest accuracy, least lost motion. And each machine in Bucyrus-Erie's ⅜- to 4-yard line of gasoline, diesel and single-motor electric machines features top-notch construction of laboratory controlled steels and alloys that means long-life and dependable big output. Reliability in tough going is another reason why Bucyrus-Eries are

Most Compared... Most Preferred

BUCYRUS-ERIE COMPANY • South Milwaukee, Wisconsin

5 IMPORTANT CONVENTIONS
Are Just Ahead

THE winter convention season is just ahead for many of the important nonmetallic mineral industries and related industries. Important national meetings are scheduled for producers of agricultural limestone, sand and gravel, ready mixed concrete, crushed stone and concrete masonry. In conjunction with several of these meetings biennial exhibits of machinery and supplies will be held. There will be more exhibits than ever before, giving the producer an exceptional opportunity to examine and compare equipment in which he is interested.

Complete programs of all these conventions are not yet available but the information on hand indicates that they are up to their usual high standards. Recognized authorities, most of them members of or directly connected with these industries, will discuss the latest and most important developments affecting these industries. Subjects covered will include production methods, merchandising, research, governmental developments, present conditions and future prospects, etc. Open forums will invite wide participation in the formal discussion of vital problems.

INDUSTRIES COVERED ARE:

Agricultural Limestone — ***Sand and Gravel***

Ready Mixed Concrete — ***Crushed Stone***

Concrete Masonry

HAVE YOU MADE YOUR HOTEL RESERVATIONS? IF NOT, DO SO NOW!

Here are the Dates and Places—

Seventh Annual Convention
National Agricultural Limestone Institute, Inc.
January 15-17, 1952
Statler Hotel, Washington, D. C.

Thirty-Fifth Annual Convention and Exhibit
National Crushed Stone Assn.
February 18-20
Conrad Hilton (formerly Stevens) Hotel, Chicago

Thirty-Sixth Annual Convention and Exhibit
National Sand & Gravel Assn.
February 11-15
Conrad Hilton (formerly Stevens) Hotel, Chicago

Thirty-Second Annual Convention
National Concrete Masonry Assn.
February 18-20
Hotel New Yorker, New York City

Twenty-Second Annual Convention and Exhibit
National Ready Mixed Concrete Assn.
February 11-15
Conrad Hilton (formerly Stevens) Hotel, Chicago

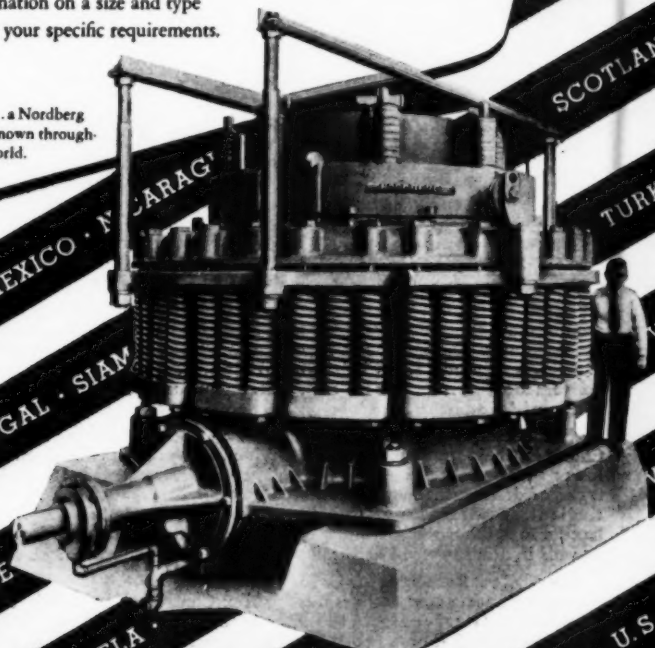
"Symons" Cone Crushers

PREDOMINATE in fine reduction crushing

the world over . . .

SUCCESSFUL operators recognize the superiority of *"SYMONS"* Cone Crushers. The great number of repeat orders Nordberg receives from major producers of ores and industrial minerals in practically every country in the world is evidence of the dependable performance of *"SYMONS"* Cones . . . the crushers that produce greater quantities of finer products at lower cost. Write for detailed information on a size and type to meet your specific requirements.

"SYMONS" . . . a Nordberg trademark known throughout the world.



AFRICA · BELGIUM · BOLIVIA · WEST INDIES · CANADA · CUBA · DENMARK · EIRE · EAST INDIES · FRANCE · HONDURAS · INDIA · NEW ZEALAND · SCOTLAND · TURKEY · AUSTRALIA · BELGIAN CONGO · CHILE · CHINA · COLOMBIA · ENGLAND · FINLAND · EQUADOR · GERMANY · GREECE · HOLLAND · IRELAND · ITALY · JAPAN · KOREA · MEXICO · NICARAGUA · NORWAY · PERU · PHILIPPINES · PORTUGAL · SIAM · SPAIN · SWEDEN · SWITZERLAND · VENEZUELA · U.S.A.

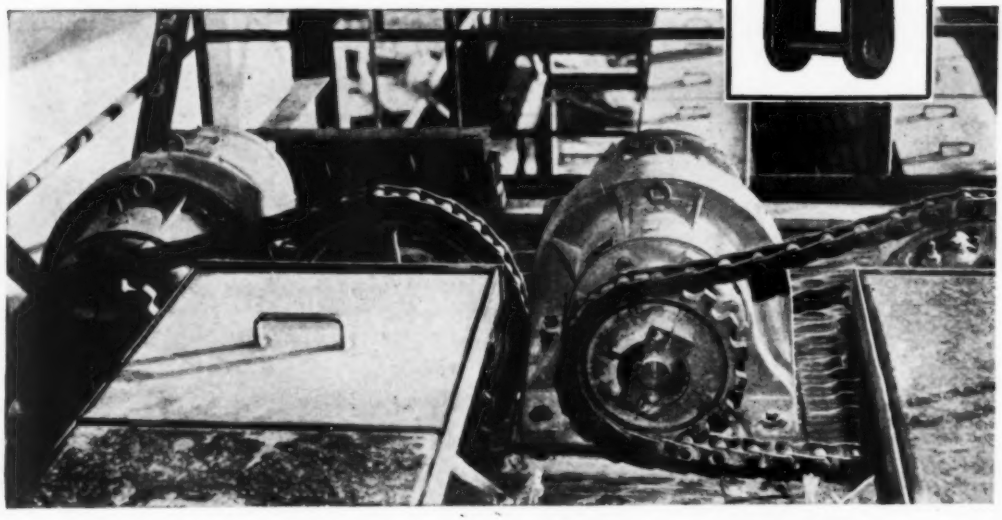
C507-R

SAN FRANCISCO · LONDON · SPOKANE · JOHANNESBURG

NORDBERG

Machinery for processing ores and industrial minerals

GET MORE HORSEPOWER PER CHAIN DOLLAR



Rex Chabelco® Steel Chain is ideal for conveyor and bucket elevator drive service in pits, quarries and cement plants. Since these drives operate under heavy loads at low to moderate speeds, Rex Chabelco delivers more horsepower for each dollar of investment. Here's why:

First, for equivalent load, Rex Chabelco Chains and Sprockets are lower in original cost than other types of driving medium. Often a single strand Chabelco Chain will handle loads that require multiple strands in other types of drives.

Second, Rex Chabelco is lowest in overall operating cost and assures long overall drive life. It is a precision-built chain made of high carbon or alloy steel, heat treated for high strength and durability. Clearances are built in between chain parts, permitting exposed operation under severe conditions. Dust and dirt are far less likely to build up between chain parts and cause "freeze-ups." Heavy shock loads are easily accommodated. Maintenance is simpler . . . more economical.

Rex Chabelco Chains come in a wide variety of sizes and strengths. They are frequently used to replace cast chains of equivalent size where greater strength is necessary. They can often operate over the same sprockets as equivalent size cast chain.

Rex Chabelco Chain Drives are *easy* to select. For information, ask your local Rex Field Sales Engineer, or write to Chain Belt Company, 1604 W. Bruce Street, Milwaukee 1, Wisconsin.

Other Rex Favorites for Pit, Quarry and Cement Mill Service

Rex Durobar® Combination Chain

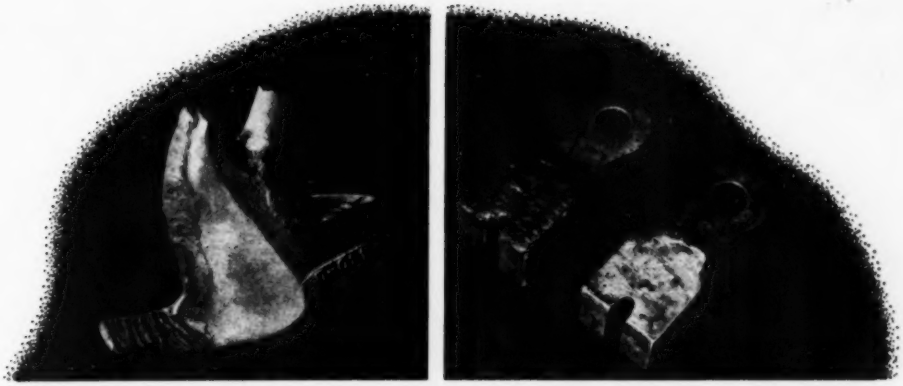
Rex Ley-Bushed Chain

Rex Style "A" Bucket

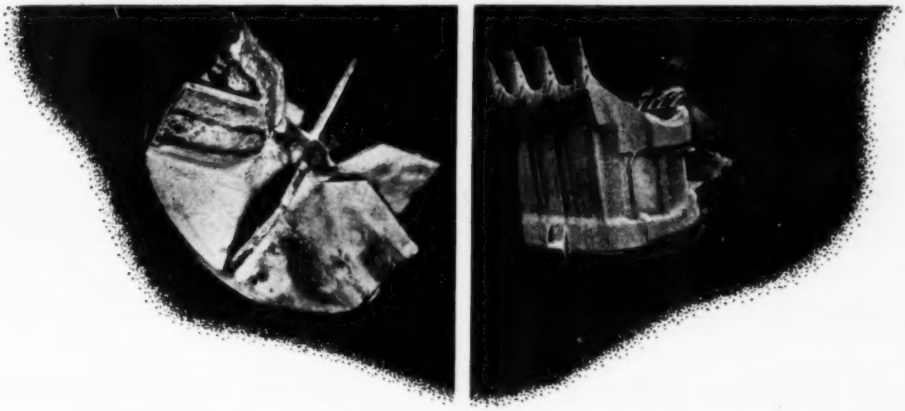
Baldwin-Rex® Roller Chain

CHAIN BELT REX COMPANY ®

CHAINS AND SPROCKETS



NAME YOUR HARD-FACING JOB!



WEAR-ARC

hard-facing electrodes will do it . . .

★ *BETTER*

★ *FASTER*

★ *CHEAPER*

EXPERIENCE PROVES that to reclaim worn equipment and parts . . . to hard-face against excessive wear . . . *Wear-Arc* hard-facing alloys are tops. Equipment life is increased three, four, or more times . . . welds last longer . . . resist abrasion and impact better. Use the seven basic *Wear-Arc* types, singly or in combination — then judge for yourself, strictly on the basis of *results*.

★Contact your Alloy Rods Distributor or write for Wear-Arc Bulletin 5651.

Alloy Rods Co.

ALLOY RODS COMPANY

No Finer Electrodes Made . . . Anywhere

YORK, PENNSYLVANIA

AR-3

in WIRE ROPE, too it takes the RIGHT KIND of muscle

The long flat muscles of the black panther give him the spring and suppleness he needs to survive in his particular environment. They're ideal for the job they're called upon to perform.

So, too, with wire rope! Specific jobs call for the right kind of muscle; the right construction and lay of the rope; the right grade of steel and size of wire... to best withstand the destructive forces encountered.

Wickwire Rope gives you the benefit of long experience and specialized know-how which assures you of exactly the right kind of rope your particular job demands.

For additional information write or phone our nearest sales office.

THE COLORADO FUEL & IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
THE CALIFORNIA WIRE CLOTH CORPORATION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New York • Philadelphia

LOOK FOR
THE YELLOW TRIANGLE
ON THE REEL

WICKWIRE ROPE

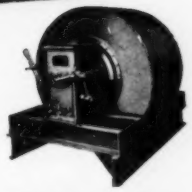
CF&I

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL & IRON CORPORATION

You Can Cut Today's High Production Costs with STURTEVANT EQUIPMENT

AIR SEPARATOR

For separation of fines to 325 mesh and finer. Increases output from 25% to 300% . . . lowers power costs by 50%. For years, this separator has been the standard in the cement industry.



DUSTLESS BLENDER

Four-way mixing action assures a thoroughly blended product. Open-door accessibility permits easy cleaning. Available in many mixing capacities for ¼ ton per hour and up.

RING-ROLL MILLS

For medium and fine reduction (10 to 200 mesh), hard or soft materials. Very durable, small power. Operate in closed circuit with Screen or Air Separator. Open-door accessibility. Many sizes. No scrapers, plows, pushers, or shields.

SWING-SLEDGE MILLS

For coarse and medium reduction (1" to 20 mesh). Open-door accessibility. Soft, moderately hard, tough or fibrous substances. Built in several types and many sizes.

JAW CRUSHERS

For coarse, intermediate and fine reduction of hard or soft substances. Heavy or light duty. Cam and Roller action. Special crushers for Ferro-alloys. Several types, many sizes.

Sturtevant equipment, such as illustrated, helps you overcome high labor and production costs by increasing output. In addition, their rugged construction assures long life with minimum maintenance. It will pay you to investigate these machines. Write for information.

STURTEVANT MILL COMPANY

104 CLAYTON STREET, BOSTON 22, MASSACHUSETTS

Designers and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS
CONVEYORS • MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

MAIL COUPON TODAY!

STURTEVANT MILL COMPANY
104 Clayton Street, Boston 22, Mass.

Gentlemen:
Please send me your catalog. I am especially interested in _____

Name _____

Street _____

City & State _____

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PROMPT DELIVERY!
SOME STOCK CRUSHERS AVAILABLE

BIG ROLL CRUSHERS

When you want efficiency and *High Capacity* for your next Secondary Reduction Job — consider Gruendler's Big 40 inch or 60 inch Roll Crushers

SINCE 1885

GRUENDLER

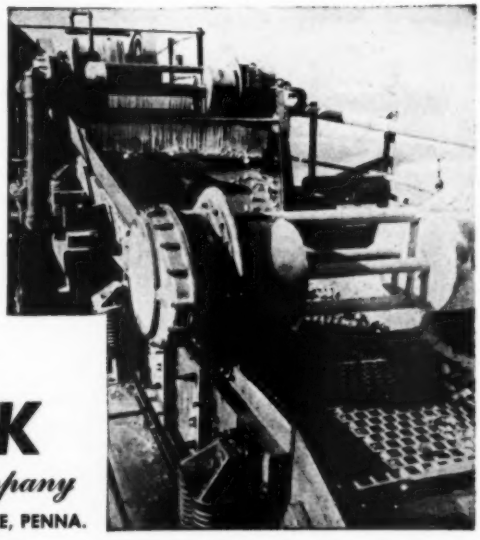
GRUENDLER CRUSHER & PULVERIZER CO. • ST. LOUIS 6, MO.

UNIFORMLY ACCURATE SIZING

You assure uniform accuracy of sizing when you use Hendrick Perforated Plate on your vibrating and shaking screens. For highly abrasive-materials the plate is heat-treated to increase its toughness and minimize wear.

The full clearance practically obviates clogging, while the ease and rapidity with which decks can be changed is another factor in keeping down screening costs.

With any desired shape and size of perforations, Hendrick Perforated Plate can be furnished—either flat or corrugated—in the proper gauges of tank, high-carbon, high-tensile, and abrasive-resisting steels, and in other commercially rolled metals.



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HENDRICK

Manufacturing Company

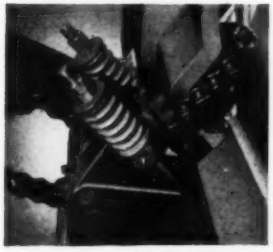
39 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices In Principal Cities

Perforated Metals
Perforated Metal Screens
Wedge-Slot Screens
Architectural Grilles
Mitco Open Steel Flooring,
Shur-Site Treads, Armorgrids

CHECK THESE FEATURES

- √ Fully Convertible
- √ Long, Wide Crawlers
- √ Alloy Cast Bases
- √ Tandem Drums
- √ Power Dipper Trip
- √ High Line Speeds
- √ Wide Vision Cabs
- √ Pin-Connected Boom



Automatic crowd chain adjuster.

the lifetime cost of a BAY CITY SHOVEL . . . on the basis of yards and tons handled . . . *is amazingly low*

While it is true that BAY CITY equipment has always been moderately priced, it's the low yearly lifetime cost that pays off. Scores of BAY CITY machines have records of 20 to 25 years or more on the job. No single factor makes BAY CITY shovels and cranes so long-wearing—so long-lasting. It is a combination of heavy-duty design and construction features that contribute to the extremely long life of BAY CITY equipment.

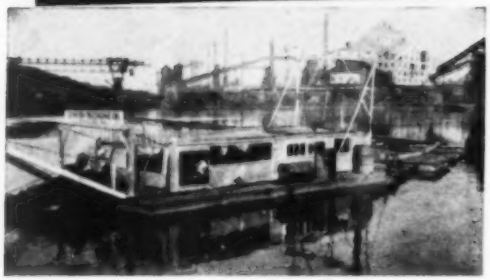
The BAY CITY Balanced Design plus the many operating and maintenance advantages have been engineered with bigger value and dependable performance. For stability the long, wide crawlers. For low center of gravity the one-piece heat-treated alloy-steel cast bases. For alignment the mounting of engine and all machinery on a full length base. Get complete information from your nearest BAY CITY dealer—write today for catalog.

BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

25,000+ Cu. Yds. in 265 Hours



H & B 8" Pump Averages Nearly 100 Cu. Yds. per Hour!

25,000+ cu. yds. in 265 working hours! That's the record of the Gunyon Dredging Co., Elkhorn, Wis., on a job at Lorain, Ohio. This was the total time, including the pipe line work on a discharge line 700 to 1200 lineal feet. The dredging was done with a Hetherington & Berner 8" Dreadnaught type pump. There's an H & B dreadnaught or standard type pump for every dredging job. Write for Bulletin DP-147.

H&B ESTABLISHED 1887

HETHERINGTON & BERNER INC.

715 Kentucky Avenue — Indianapolis 7, Indiana

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Get a BETTER SHAKE!

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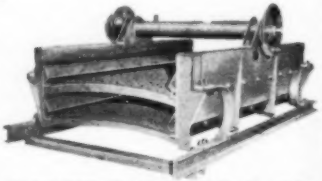
VIBRATING SCREENS

Only KOLMAN Screens give you the freedom of action necessary for large capacity without transmitting vibrations to attached equipment. And the simplicity of design gives dependable performance, low maintenance cost. Greater volume—longer screen life—less wear to your conveyor or loader—when you buy a KOLMAN!

Single and multi-deck models — there's one that's just right for your job. See your dealer or write today for illustrated folder.



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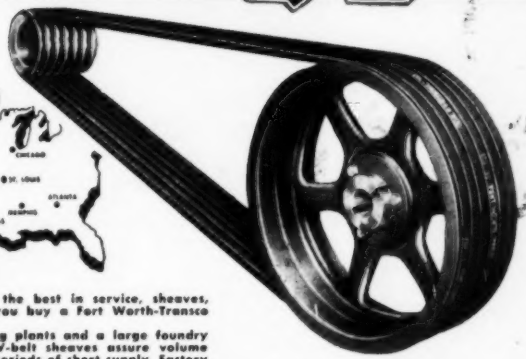
FORT WORTH TRANSCO QD SHEAVE



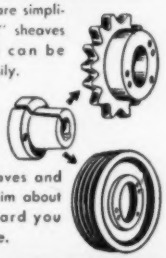
You will receive the best in service, sheaves, and V-belts when you buy a Fort Worth-Transco V-drive.

Two manufacturing plants and a large foundry designed to make V-belt sheaves assure volume production even in periods of short supply. Factory warehouses supplemented by numerous stocking distributors provide quick delivery on stock sizes.

The advantages of "QD" construction are many. We will be pleased to explain them to you at any time.

"QD" HUB ALSO FITS NEW FORT WORTH "QD" Roller Chain Sprocket

Speed changes are simplified and "spare" sheaves and sprockets can be carried more easily.



If your favorite distributor doesn't stock the Fort Worth QD line – both sheaves and sprockets – tell him about them. He'll reward you with better service.

Write for name of nearest distributor and for descriptive catalogs on "QD" Sprockets and Sheaves.

OTHER FORT WORTH PRODUCTS
ROLLER CHAIN SPROCKETS
SCREW CONVEYORS and ACCESSORIES
SCREW ELEVATORS
INDUSTRIAL FANS

WAREHOUSES:
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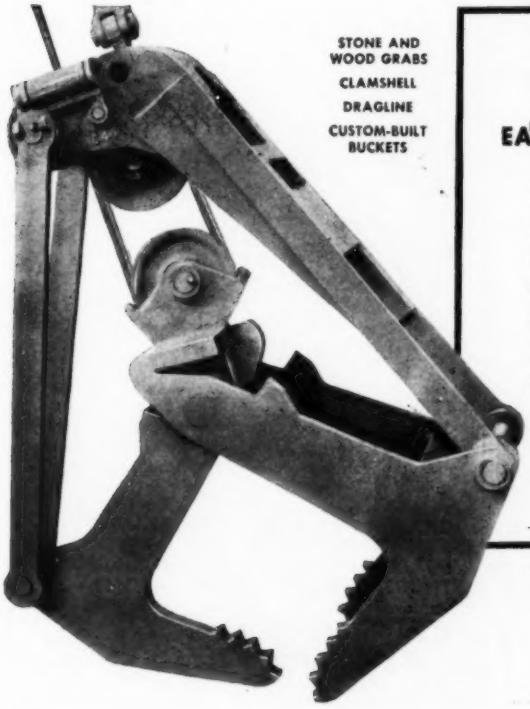
FORT WORTH STEEL AND MACHINERY CO.
Dept. 251 — 3600 McCart Street FORT WORTH, TEXAS



STONE AND WOOD GRABS
CLAMSHELL
DRAGLINE
CUSTOM-BUILT BUCKETS

WELLMAN

EASY HANDLING OF LARGE STONES

• Those big stones won't slip from the Wellman Stone Grab. Four-part closing cable reeving develops tremendous closing force on stones. Model shown has 5-ton capacity, 4½ foot jaw spread. Other capacities available.

Want Facts? Send for free descriptive bulletins.

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Research Corp. Engineer — Yes sir, we are now in a position to offer our equipment and experience gained in other industries to cement plants for the removal of dust from cement plant furnace gases.

This experience enables us to guarantee any efficiency up to 99% depending on your individual requirements.

Plant Manager — What about draft loss?

Research Corp. Engineer — It's extremely low —only a few tenths of an inch of water.

Plant Manager — Do you actually guarantee performance?

Research Corp. Engineer — Absolutely. And you can depend upon Research Corporation because of our wide experience in the field of electrical precipitation. That's your yardstick of performance.

For more data on Research-Installed Cottrells, send for Bulletin 500

RC 126

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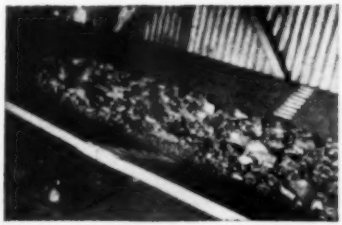
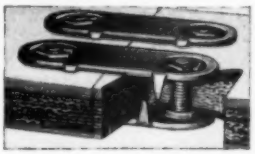
FLEXCO® BELT FASTENERS and RIP PLATES



FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

★ FLEXCO Fasteners make tight butt joints of great strength and durability.
★ Trough naturally, operate smoothly through take-up pulleys.
★ Distribute pull or tension uniformly.
★ Made of Steel, "Monel," "Everdur." Also "Promal" top plates.



Compression Grip distributes strain over whole plate area

★ FLEXCO Rip Plates are for bridging soft spots and FLEXCO Fasteners for patching or joining clean straight rips.

Order From Your Supply House. Ask for Bulletin F-100

FLEXIBLE STEEL LACING CO.
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THIS ELEVATOR BUCKET *CANNOT FAIL* TO EMPTY

ON *EVERY* TRIP!

PEKAY M-T-MATIC BUCKETS *can't* retain Sand-Coal-Gravel or other granular materials, even if close-packed. Separately mounted Stripper-Plate *must* push up and out when it starts over pulley radius . . . gives irresistible leverage to dislodge and sweep out bucket contents. **CONTROLLED-CAPACITY DELIVERY . . . MORE MATERIAL AT SAME OR FASTER BELT SPEEDS . . . .** *Easy to Install . . Saves Belts . . Cuts Maintenance.* **THOUSANDS NOW IN USE.** (Standard buckets also available.)

★*Send for prices today—Quick delivery—(Give present bucket size)*

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The BROWN COMPANY, Quality Paper Makers of Berlin, New Hampshire, said this in an operating report on one of their Kraft Mill Lime Kilns after changing over from conventional oil lubrication to LUBRIPLATE No. 130AA. Huge savings like this cannot be overlooked. It is worth your while to see what LUBRIPLATE Lubrication can save you.

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Write today for case histories of savings made through the use of LUBRIPLATE in your industry.

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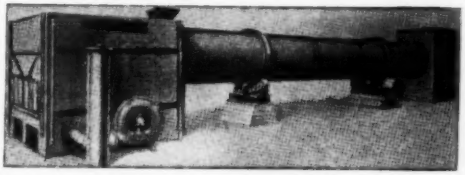
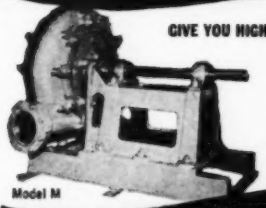


W. P. HEINEKEN
ENGINEER & MANUFACTURER
50 BROAD STREET NEW YORK, N. Y.

Lightning SAND & GRAVEL PUMPS

GIVE YOU HIGH CAPACITY AT LOWEST COST...



Model M

Lightning Semi-Heavy pumps deliver against 90-ft. heads, pump 9 yds. an hour from 3-in. size. Also 4, 6, 8-in. sizes. Lightnings have the lowest first, replacement and operating costs of any pump built. Write for information.

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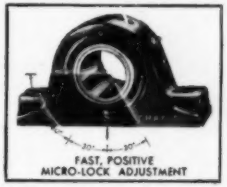
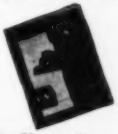
SELF-ALIGNING "Z" SEAL

Shafer ConCaVex Bearings have the design and construction features that keep them free-rolling, self-aligning and self-centering under *all* operating conditions at *all* times—without additional weight or size, without shoulders, without auxiliary means of absorbing thrust.

With Shafers you get stamina and performance advantages exceeded by none: Capacity for radial, thrust or any combined radial-thrust loads • High shock load capacity with low friction • Integral self-alignment within the bearing itself • Exclusive Micro-Lock for quick, simple bearing adjustment • Exclusive, self-centering "Z" Type Housing Seal • Compact sturdiness combined with the original Shafer ConCaVex design which has answered industry's every dependability need for more than 32 years. Complete engineering service for the asking. SHAFER BEARING CORPORATION, 801 Burlington Ave., Downers Grove, Ill.



FAST, POSITIVE MICRO-LOCK ADJUSTMENT



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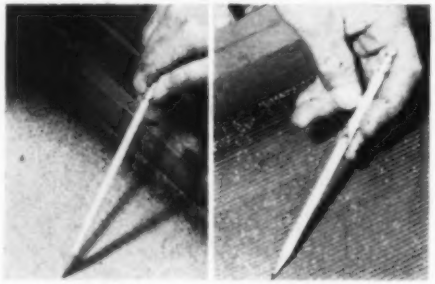
SHAFER CONCAVEX

Pillow Blocks • Flange Units • Cartridge Units • Flange Cartridge Units • Duplex Units • Take-Up Units • Take-Up and Frame Units • Unmounted Bearings • Aircraft Control Bearings.



Without Heater
note blinding of mesh

With Heater
note lack of blinding

increase capacity and life of your screens with the

Used on any single or multiple woven-wire screen; No. 2 mesh or smaller; Hanco Electric Screen Heaters reduce the moisture content of sand, limestone, lime, clay etc. to prevent "blinding". Screen capacity is increased as much as 50%. Beating to open the screen is eliminated; screens last longer. Write for bulletin.

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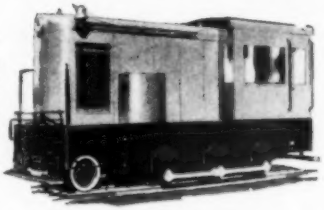
HANCO Electric Screen Heaters

HYDRAULIC DRIVE GAINS in FAVOR

This 24-Ton, 2-6-0, 30" Gauge, Davenport Diesel Torque Converted Locomotive is equipped with Cummins HRS Engine and Twin Disc—2 Speed Converter.



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STEAM
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DIESEL
with
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or HYDRAULIC
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Notable among available Davenport and Porter Locomotives are those with Torque Converter (Hydraulic) Drive. They offer smooth, quiet transition from one speed level to another without engine slowdown during speed changes; freedom from load shocks or jerks; easier operation and greater work output.

TO FIT YOUR NEEDS

Our engineers will gladly analyze your haulage requirements and submit recommendations for best results.

DAVENPORT LOCOMOTIVE Division
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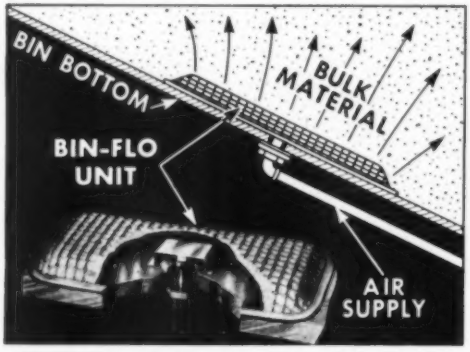

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USES SMALL VOLUME OF AIR AT LOW PRESSURE

KEEPS BULK MATERIALS MOVING

BIN-FLO units in bins, chutes, hoppers, etc., restore flow characteristics to dry, finely ground materials which tend to pack or bridge in storage. Types for all materials and conditions. No moving parts; simple installation; negligible operating cost; no maintenance cost.

BIN-DICATOR bin level indicator—"The Eyes of the Bin"—automatically reports levels of materials in storage; automatically controls filling machines; prevents waste.

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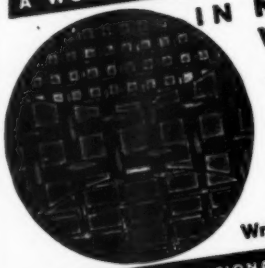
A WORLD OF CONFIDENCE
IN NAT-ALOY WIRE CLOTH



COVERS EVERY REQUIREMENT

. . . for a dependable, long-wearing, non-crystallizing Screen Cloth. Has "Nat-Aloy" Lock Crimp Meshes. Preferred for screening accuracy, economy and serviceability. All Sizes — All Meshes — All Gauges.

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"Cross" Perforated Steel Screens

Look for this Stamp on all "Cross" Products

the Sign of PLUS QUALITY for PLUS PERFORMANCE

- *More Open Area*
- *Tougher Steel*
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Manufacturers

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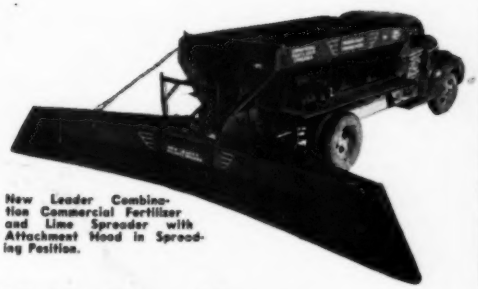
We invite you to visit our Exhibit—Booth "C"



New Leader Combination Commercial Fertilizer and Lime Spreader with Attachment Hood in Spreading Position.

Make More Money

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COMMERCIAL FERTILIZER AND LIME SPREADER

Get complete description and profit-making facts about the spreader that's guaranteed to spread any commercial fertilizer accurately and uniformly. Also handles crushed rocks, chips and gravel. Reinforced welded steel frame; steel or wooden hopper. Simplified worm gear drive from truck-power take-off; dust proof, oil-tight gear box. (Optional: conveyor may be separately driven from truck drive shaft to deliver correct number of pounds per acre —regardless of truck speed or gear used.) Accuracy of spread can be controlled to as little as 150 lbs., per acre. Mounts on any standard truck chassis. Sizes: 9', 11', 13' and 15'.

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Manufacturers of the World's Most Complete Line of Spreaders

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Two only 1250 KVA, 1000 KW Electric

GENERATORS

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SENSATIONAL SAVINGS NOW MADE POSSIBLE!

Actual performance records in plant after plant prove that Magic-Vulc doubles and triples conveyor belt life and saves thousands of dollars in belt replacement costs.

REPAIRS WORN BELTS — EASY TO APPLY

Magic-Vulc is a self-cold-curing plastic rubber compound that gives old, worn out conveyor belts a new lease on life! When applied to badly worn spots on a conveyor, it forms a tough flexible coating that resurfaces the belt and makes it ready for efficient operation again.

Magic-Vulc requires no heat or special machinery. Your own workmen can apply it without removing belt from pulley. After only 12 hours of standing (cold-curing), the belt is ready for use. 20 lb. can of Magic-Vulc coats an area of 75 to 100 sq. ft., depending on condition of belt.

Magic-Vulc also has countless other applications as a tough coating to protect all types of industrial equipment from corrosion and abrasion.

SPECIAL TRIAL OFFER with MONEY-BACK GUARANTEE!

Try Magic-Vulc in your own plant at our risk! We'll send you a complete trial kit, including all the chemicals and tools you need, for only $37.50. You must be 100% satisfied or your money will be quickly refunded.

TRIAL KIT only $37.50

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☐ Send us your $37.50 trial kit, including a 20-lb. can of MAGIC-VULC with cleaning fluid, primer, tools and instructions for applying.

☐ Send us FREE folder giving more information about MAGIC-VULC.

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Manufacturer's agents! A few choice sales territories are still open. Write for details!

Clean Sand and Gravel . . . a *Must* for Contractors

RELIANCE Roller Bearing Washing Screens with special scrubbing sections insure thorough breaking up of the material.

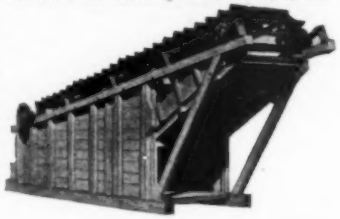
Write for Bulletin

. . . *at new low cost with*

RELIANCE Equipment

FOR fast economical production, use the high-efficiency washing and screening methods, now available in Reliance Machinery. Dynamic improvements in the past five years have made Reliance the standard equipment in modern installations everywhere. If you require a single machine, a combination of units or a complete plant, you can depend on Reliance experience for best results.

RELIANCE Paddle Type Wash Box with long gradual incline gives a clean, dewatered product that can be loaded or stored without segregation.



UNIVERSAL ROAD MACHINERY CO. **KINGSTON, N. Y.**

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. . . WHITCOMB LOCOMOTIVES
have extra power for the heavy loads.

THE WHITCOMB LOCOMOTIVE CO., ROCHELLE, ILLINOIS
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TIMANG WELDING PRODUCTS

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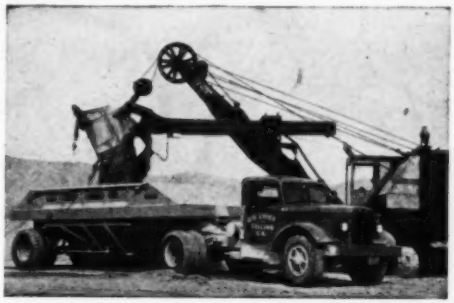

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1 **Hoist, Ottumwa, 48" dia. x 48", 5½" shaft,—grooved for 1" wire rope. Westinghouse Controller—G.E. CR-9516 Thrustor Brake.**

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1	15	G.E.	IK	720
1	20	G.E.	KF	1800
1	20	Wag.	15VRP	1200
1	20	G.E.	KT	1200
1	25	G.E.	KT	1800
1	25	G.E.	KF	1800
1	25	G.E.	IK	1200
2	25	G.E.	KT	900
1	25	G.E.	K	900
1	25	G.E.	IK	600
1	30	Whse.	CS	1200
4	30	F.M.	H	1200
1	30	G.E.	KT	900
1	30	W.E.	CS13B	720
1	35	G.E.	IK	1800
6	35	A.C.	AR	450
1	40	Whse.	CS	1200
1	40	Whse.	CCL	600
1	50	G.E.	KT	1200
1	50	A.C.		900
2	50	Whse.	CCL	600
1	75	Whse.	C	600
1	150	F.M.	O	1800

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Above four hoists LATE MODEL LIKE NEW.

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50000 feet of standard elevator, drive and drag chains
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1—12 x 36 Twin Jaw Cedar Rapids Crusher with grooved flywheel, Serial #8302, factory rebuilt with guarantee

1—3033 Cedar Rapids Hammermill, Good condition

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INGERSOLL-RAND K-500 Diesel Compressor, mounted on Chevrolet truck. Overhauled. Excellent. $4500.00.
C-P. #315 Portable Compressor. D-8800 Diesel. Also smaller ones. Rental with purchase option.
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TD-24 (2) with Bucyrus-Erie Cable Dozers. Latest model, planetary type clutches, rollers. Tracks, rollers, sprockets show very little wear. Bargain. $15,000.00 each.
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PIONEER No. 56 Portable two unit Crushing Plant. D-17000 Cat. Diesels. 30" x 42" RB. Primary Jaw, 54" x 24" RB. Double Rolls, 40" x 12' ft. Travelling Grizzly. Also smaller 15" x 36" RB. portable. Consider rental purchase, tonnage or monthly.
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1—Northwest Model 25, ¾ yd. crawler shovel, gas power, rebuilt.
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1—Bay City Model 25, ½ yd. crawler hoe crane, gas power, rebuilt.
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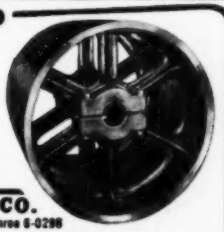

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Lima 802 Diesel Crane with 120' boom.
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Bucyrus-Erie 10B Shovel w/International UD-6 diesel engine, independent boom hoist, used 400 hours, new in July.
501 feet Barber Greene 24 inch truss conveyor and 24 inch 16/19x3000 lb. tensile rubber belt. Roller Bearing rolls. One 7½ H.P. electric drive, and one 20 H.P. electric drive, gravity and screw takeups. Conveyor purchased in July 1951 and good as new. Three spare new electric motors.

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BYERS TRUCK MOUNTED
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One used dragline attachment complete for late model 120 Bucyrus machine, in 37,000 series, consisting of 110' boom, auxiliary gantry, hoist drum, boom hoist drum, drag drum lagging, 4 yard dragline bucket including cables, etc. 811 in good condition. Location vicinity Hazleton, Pa.

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Plymouth 35-ton gasoline locomotive, std. ga.
Crushers: 36"x48", 24"x36", 18"x32" jaw, 18", 30" gyratories; Symons 5½' cone; 3030 Impactor.
Pioneer and Lippmann gravel plants, (2).
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Roll Crushers—Rod Mills—Ball Mills—Rotary Kilns—Dryers 10'x30' others—Feeders—Classifiers—Tuggers—Mine Hoists—Motors—Transformers 150 KVA —25,000 to 2300/440—others. Gravel Plants—Bhat Hole Drills—37T-29T-42T—Shovels—Cranes—Draglines—Generator Set—250 KVA 440 Volt—Diesel—others. Dart Trucks—15 Yd. Coal Bodies.

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APRON CONVEYOR, 30" x 47', complete with chains, sprockets, rollers, rails, gear reducer and motor. Unused.

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Large quantity of brick lining also available.

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1 #25 Kennedy Crusher, late type with split grinding ring, new type oiling system and V-Belt drive with motor—Good Condition.
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16"	4	1/8"	1/32"	28 Oz.
18"	4	1/8"	1/32"	28 Oz.
20"	4	1/8"	1/32"	28 Oz.
20"	5	1/8"	1/32"	28 Oz.
24"	4	1/8"	1/32"	28 Oz.
24"	5	1/8"	1/32"	28 Oz.
26"	5	1/8"	1/32"	28 Oz.
30"	4	1/8"	1/16"	32 Oz.
30"	5	1/8"	1/16"	32 Oz.
30"	6	1/8"	1/16"	32 Oz.
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1—10"-B Telsmith Gyratory Crusher
1—18" Intercone Crusher
1—18" x 36" Farrell Jaw Crusher
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1—25"-40" Cedar Rapids Crusher
1—48" Telsmith Gyrasphere Crusher
1—24" Telsmith Gyrasphere Crusher
1—32" and 1—40" Telsmith Gyratory Crusher
1—42" x 10' 2-Deck Cedar Rapids Screen
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1—24" x 40" Double Roll Crusher
1—14" x 20" Roll Crusher
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INDEX TO ADVERTISERS

Acme Road Machinery Co. 309
Air Reduction Sales Co. 182
Agency—G. M. Basford Co.

*Allis-Chalmers Mfg. Co. 19, 210, 221, 233
Agency—Compton Advertising, Inc.

*Allis-Chalmers Mfg. Co. Tractor Div. 34, 35
Agency—Bert S. Gittins

Alloy Rods Company 293
Agency—W. H. Long Co.

American Cyanamid Co. 216
Agency—Hazard Advertising Co.

American Hoist & Derrick Co. 196
Agency—Alfred Colle Co.

American Manganese Steel Div. of American Brake Shoe Co. 20
Agency—Fuller & Smith & Ross, Inc.

*American Pulverizer Co. 183
Agency—Batz-Hodgson, Neuwoehner

*American Steel & Wire Co. ..13, 214, 215
Agency—Batten, Barton, Durstine & Osborne

Anaconda Wire & Cable Co., Sub. of Anaconda Copper Mining Co. 26
Agency—Kenyon & Eckhardt

Atlas Powder Co. 12
Agency—Aitken-Kynett Co.

Atlas Concrete Products Co. 277

*Austin-Western Company 68
Agency—Advertising Corp.

*Babcock & Wilcox Co. 75
Agency—O. S. Tyson & Co., Inc.

Bacon Pletsch Co., Inc. 60

*Bailey Meter Company 208, 209
Agency—Fuller & Smith & Ross, Inc.

Baldwin-Lima-Hamilton Corp. 68, 202, 304

*Barber-Greene Co. 56, 57
Agency—Buchen Co.

Baughman Mfg. Co. 264
Agency—Mace Advertising Agency, Inc.

Bay City Shovels 297
Agency—Price, Hedrick & Tanner, Inc.

*Bemis Bro. Bag Co. 234
Agency—Gardner Adv. Co.

Bernstein Brothers 314

*Besser Manufacturing Co. 245, 246
Agency—Paulson-Gerlach & Assoc.

*Bethlehem Steel Co. 227
Agency—Jones & Brakeley, Inc.

Bin-Dicator Co. 302
Agency—Clark & Rickerd, Inc.

Blue Ball Machine Works 417

Bonded Scale & Machine Co. 277

Boston Woven Hose & Rubber Co. ... 219
Agency—Sutherland-Abbott

Boyer, R. H. 313

Bradley Pulverizer Co. 190
Agency—Sanders & Thomas, Inc.

Brill Equipment Co. 308

Broadcast Section 307-317

Bucyrus-Erie Company 289
Agency—Bert S. Gittens, Adv.

Buda Co. 7
Agency—Ross Llewellyn, Inc.

*Buell Engineering Co., Inc. 211
Agency—Hicks & Greist, Inc.

Buffalo Slag Co., Inc. .....

Burnham, Royal E. 307

*Butler Bin Co. 267
Agency—Davis-Greene Corp.

Cabot, Inc., Godfrey L. 198
Agency—Larcom Randall

Cape Ann Anchor & Forge Co. 191

Carlyle Rubber Co., Inc. 315

Carpenter Manufacturing Co. 284

Carpenter, Inc. Terry 311

Caterpillar Tractor Co. 17
Agency—N. W. Ayer & Son, Inc.

Cedar Rapids Block Co. 285
Agency—Ambro Advertising

Chain Belt Company 292
Agency—Buchen Co.

Chase Bag Company 33
Agency—Buchen Co.

Chase Foundry & Mfg. Co. 285

Chicago Electric Co. 311
Agency—Slaaf Advertising

Chicago Pneumatic Tool Co. 95
Agency—G. M. Basford Co.

*Chicago Steel Foundry Co. 192
Agency—Wamsley & Heer, Inc.

Cities Service Oil Co. 41
Agency—Ellington & Co., Inc.

Clapp, Riley & Hall Co. 278

Cleveland Vibrator Co. 263
Agency—R. C. Wellman & Assoc.

Cleveland Worm & Gear Co. Inside Back Cover
Agency—The Griswold-Eshleman Co.

Clipper Mfg. Co. 275
Agency—Potts-Turnbull

Coast Metals, Inc. 62
Agency—Lewin, Williams & Saylor, Inc.

*Colorado Fuel & Iron Corp., Wickwire Spencer Steel Division..232, 294
Agency—Doyle, Kitchen & McCormick, Inc.

Columbia Machine Works 281
Agency—Ray Carr Organization

Columbia Steel Company ...13, 214, 215
Agency—Batten, Barton, Durstine & Osborn

Colprovia Roads, Inc. 195

*Combustion Engineering-Superheater, Inc. 70, 71
Agency—Wamsley & Heer, Inc.

Concrete Transport Mixer Co. 284
Agency—Christy Humburg Adv.

Continental Gin Co. 203
Agency—Sparrow Adv. Agy., Inc.

Cook Bros. Equipment Co. 269
Agency—Houston Adv. Service

Cross Engineering Co. 302

Darden Industries, Roy 274
Agency—Richardson & Sanders

Davenport Locomotive Works 302
Agency—Fred A. Hinrichsen

*Deister Machine Co. 186
Agency—Spencer Curtiss, Inc.

Dempster Brothers, Inc. 69
Agency—Charles S. Kane

Detroit Diesel Engine Div. 158
Agency—Kudner Agency, Inc.

*Diamond Iron Works, Inc. 201
Agency—F. H. Faber, Inc.

Dodge Mfg. Co. 24
Agency—Lamport, Fox, Prell and Dolk, Inc.

*Dorr Company, Inc. 205
Agency—Sutherland-Abbott

Du Pont de Nemours & Co., E. I., Inc. 73
Agency—Batten, Barton, Durstine & Osborne

Dur-O-Wal Products, Inc. 285
Agency—Ambro Advertising

*Eagle Crusher Co. 152
Agency—Coleman Todd & Assoc.

Eagle Iron Works 177
Agency—Tri-State Adv. Co.

*Easton Car & Construction Co. 3
Agency—Frederick A. Richardson

Eighmy Equipment Co. 312

Elmco Corporation 15
Agency—Matsie Company

Electro-Alloys Div. of American Brake Shoe 223
Agency—Fuller & Smith & Ross, Inc.

Ellis Company 314

Ensign-Bickford Co. 21
Agency—Wm. B. Remington, Inc.

Equipment Corp. of America 310
Agency—George L. DeVille

Erickson Power Lift Trucks, Inc. .. 281
Agency—Foulke Agency

*Erie Steel Construction Co. 6
Agency—Davies and McKinney

*Euclid Road Machinery Co. 72
Agency—Bayless-Kerr Co.

Fanning-Schuett Engineering Co. 270

*Farrel-Bacon 198
Agency—Gassaway, Mark & Co.

Farrell-Cheek Steel Co. 53
Agency—Robert R. Frissell, Inc.

Fate-Root-Heath Co. 42
Agency—Howard Swink, Adv.

Firestone Tire & Rubber Co. 155
Agency—Sweeney & James

Fiske Brothers Refining Co., Lubriplate Div. 301
Agency—E. M. Freystadt Assoc.

Flexible Steel Lacing Co. 300
Agency—Kreicker & Meloan, Inc.

Forney's, Inc. 280
Agency—Danford Studio

Forth Worth Steel & Machy. Co. 299
Agency—William E. Jary Co.

Frank, M. K. 312

Frog, Switch & Mfg. Co. 198

*Fuller Co. 44, 45
Agency—O. S. Tyson & Co., Inc.

Gardner-Denver Co. 55
Agency—Buchen Co.

Gates Rubber Co. 8
Agency—Cloyd F. Wooley, Inc.

General Tire & Rubber Co. 51
Agency—Howard Swink, Adv.

General Tire & Rubber Co. 137
Agency—D'Arcy Advertising Co.

Gilson Screen Co. 195

Goodyear Tire & Rubber Co. ..... 1, Back Cover
Agency—Kudner Agency, Inc.

*Gruendler Crusher & Pulverizer Co. 296
Agency—Christy Humburg, Adv.

Gulf Oil Corp. 27
Agency—Young & Rubicam

*Hammermills, Inc. 204
Agency—Kuester Adv.

Hannon & Sons, F. R. 302
Agency—H. M. Klingenamith Co.

*Hardinge Company, Inc. 185
Agency—W. H. Long Co.

Harnischfeger Corp. 54
Agency—Buchen Co.

Hauger Masonry & Supply Co. 276

Hawkins & Co. 317

Hazelton Machy. & Equipt. Co. 309

Heat and Power Co. 313

Heehs & Sons, E. D. 314

Heidenreich, E. Lee 307

W. P. Heineken 301

*Hendrix Mfg. Co. 306
Agency—G. M. Basford Co.

*Hendrick Mfg. Co. 296
Agency—Svolos Adv. Service

Hercules Powder Co. 67
Agency—Fuller & Smith & Ross, Inc.

Hetherington & Berner, Inc. 298
Agency—Caldwell-Larkin & Co., Inc.

*Hewitt Rubber Division, Hewitt-Robins Inc. 189
Agency—Fuller & Smith & Ross, Inc.

Highway Equipment Co. 303

Holbeck Corporation 137

Homer Mfg. Co. 49
Agency—Central Adv. Agency

Hough Co., Frank G. 230
Agency—Ervin R. Abramson, Adv.

Houston Concrete Machinery Co. 286
Agency—W. L. Culver Adv. Service

Hudson Pulp & Paper Corp. 25
Agency—Robertson & Buckley, Inc.

International Harvester Co. of America 222
Agency—Leo Burnett Co., Inc.

*Iowa Manufacturing Co. 156, 157
Agency—Russell T. Gray, Inc.

*Jaeger Machine Co. 169
Agency—Mumm, Mullay & Nichols, Inc.

*Jeffrey Mfg. Co. 212
Agency—Ryer & Bowman Adv.

*Johns-Manville Corp. 184
Agency—J. Walter Thompson Co.

Johnson Co., C. S. 224, 225
Agency-Andrews Agency, Inc.

Jones & Laughlin Steel Corp. 50
Agency—Ketchum, MacLeod & Grove, Inc.

Jones Concrete Machy. Co., J. A. .. 285
Agency—G. M. Basford Co.

*Joy Manufacturing Co. 10
Agency—Walker & Downing

★See also Detailed Information in 1951 Pit and Quarry HANDBOOK

INDEX TO ADVERTISERS

Kansas City Hay Press Co. 301
Agency—Carl Lawson Adv. Co.

*Kennedy Van Saun Mfg. & Eng. Corp. 63, 64, 65, 66

Kent Machine Co. 279
Agency—T. H. Ball and Sons

King Powder Co., Inc. 104
Agency—Strauchen & McKim

Koehring Co. 224, 225
Agency—Andrews Agency, Inc.

Kolman Mfg. Co. 298
Agency—Maurice Paulsen, Adv.

Korb Petti Wire Fabrics & Iron Works, Inc. 197
Agency—Carl Mason Craig

Kraft Bag Corp. 103
Agency—Arthur A. Judson, Inc.

Landis Steel Co. 305
Agency—Gibbons Adv. Agency, Inc.

Lehigh Portland Cement Co. 273
Agency—Geare-Marston, Inc.

Le Tourneau, Inc., R. G. 28, 29
Agency—Andrews Agency, Inc.

Lima Shovel & Crane Division Baldwin-Lima-Hamilton Corp. 202
Agency—Ketchum, MacLeod & Grove

*Link-Belt Company 2, 320
Agency—Klau-Van Pietersom-Dunlap Assoc. Inc.

*Link-Belt Speeder Corp. 213
Agency—Klau-Van Pietersom-Dunlap Assoc. Inc.

*Lippmann Engineering Works 226
Agency—F. C. Alexander

Lith-I-Bar Co. 271
Agency—Lindeman Adv. Service

Littleford Bros. 282
Agency—Jaap-Orr Co.

Little Giant Crane & Shovel, Inc. 305

Lone Star Cement Corp. 236
Agency—Cowan & Dengler, Inc.

Lubriplate Division, Fiske Bros. Refining Co. 301
Agency—E. M. Freystadt Assoc. Inc.

Lull Mfg. Co. 23
Agency—F. H. Faber, Inc.

Luria Brothers & Co., Inc. 308
Agency—Philip Klein, Inc.

MacDonald Engineering Co. 231

Mack Trucks, Inc. ... Inside Front Cover
Agency—Doyle, Kitchen & McCormick, Inc.

Magic Chemical Co. 303
Agency—George T. Metcalf Co.

Manhattan Rubber Div. 229
Agency—Roland G. E. Ullman Organization

*Marion Power Shovel Co. 38, 39
Agency—Jay H. Maish Co.

Material Service Corp. 276
Agency—D. J. Carlson & Assoc.

McCarthy Improvement Co. 303
Agency—Sperry-Boom, Inc.

McConville, Inc. 313

*McLanahan & Stone Corp. 16
Agency—Walker & Downing

*Merrick Scale Mfg. Co. 193

Mott Core Drilling Co. 307

Multiplex Machinery Corp. 268
Agency—A. Hemsing

Murphy Diesel Co. 217
Agency—Russel T. Gray, Inc.

Nagle Pumps, Inc. 188
Agency—Tri-State Adv. Co.

National Wire Cloth Co. 302

*Naylor Pipe Co. 176
Agency—Fred H. Ebersold, Inc.

Nopco Chemical Co. 199
Agency—Lewin, Williams & Saylor, Inc.

*Nordberg Manufacturing Co. 291
Agency—Russell T. Gray, Inc.

*Northern Blower Company 36
Agency—Carr Liggett Agency

Northwest Engineering Co. 5
Agency—Russell T. Gray, Inc.

Oliver Corporation 218
Agency—Buchen Co.

Olsen Corp., Gene 235
Agency—Fred P. Bingham

O'Neill, A. J. 311

Osgood Company 200
Agency—Howard Swink, Adv.

Oswalt Engineering Service Corp. .. 279
Agency—Wamsley & Heer, Inc.

Owen Bucket Co. 167
Agency—T. H. Ball & Sons

Pekay Machine & Engineering Co. .. 300
Agency—Vanden Co., Inc.

Pekor Iron Works 194

Pennsylvania Drilling Co. 307
Agency—Edward M. Power Co.

Pettibone Mulliken Corp., Construction Equipment Div. 30, 31
Agency—W. D. Lyon Co.

Philadelphia Gear Works 207
Agency—R. E. Lovekin Corp.

*Pioneer Engineering Works, Inc. .58, 59
Agency—Alfred Colle Co.

Portland Cement Assn. 283
Agency—Roche, Williams & Cleary, Inc.

Porter Electric Co. 307

Praschak Machine Co. 284

Pyott Foundry & Machine Co. 311
Agency—

*Quaker Rubber Corp. 151
Agency—A. E. Aldridge Assoc.

"Quickway" Truck Shovel Co. 18
Agency—Galen E. Broyles., Inc.

Quinn Wire & Iron Works 282
Agency—Lessing Adv. Co., Inc.

Raybestos-Manhattan, Inc., Manhattan Rubber Division 229
Agency—Roland G. E. Ullman Organization

*Raymond Pulverizer Div. of Combustion Engineering-Superheater, Inc. 70, 71
Agency—Wamsley & Heer, Inc.

Reading, Inc., Eugene P. 311

Reichard-Coulston, Inc. 284

R. C. Reid, Engineers 193

Rental Mixer Corp. 316

Research Corp. 300
Agency—Michel-Cather, Inc.

Riddell Corp., W. A. 282
Agency—Harry M. Miller, Inc.

*Robins Conveyor Division Hewitt-Robins Inc. .....
Agency—Fuller & Smith & Ross, Inc.

Rock Bit Sales & Service Co. 191
Agency—Norman P. Hewitt, Adv.

Rust-Oleum Corp. 43
Agency—O'Grady-Andersen-Gray, Inc.

Sauerman Bros. Inc. 187
Agency—Symonds & MacKenzie

Schaffer-Poidometer Co. 197

*Schramm, Inc. 4

*Screen Equipment Co. 220
Agency—Kelly Co., J. G.

Shafer Bearing Corp. 301
Agency—Marsteller, Gebhardt & Reed, Inc.

Shundler & Co., F. E. 265
Agency—Biddle Co.

Sinclair Refining Co. 61
Agency—Morey, Humm & Johnstone, Inc.

Simplicity Engineering Co. 32
Agency—Price, Hedrick & Tanner, Inc.

*Sly Mfg. Co., W. W. 178
Agency—Bayless-Kerr Co.

*Smidth & Co., F. L. 77
Agency—Stuart Co.

Smith Engineering Works 46, 47
Agency—Cramer-Krasselt Co.

Smith, Inc., L. B. 309

T. L. Smith Co. 272
Agency—Paulson-Gerlach & Assoc.

Southwestern Engineering Co. 188
Agency—McCarty Co.

South Texas Machy. Co., Inc. 309

Spang & Company 196
Agency—Smith, Taylor & Jenkins, Inc.

Spooner Concrete Products 278

Sprague & Henwood, Inc. 194
Agency—Frederick B. Garrahan

Sperry Products, Inc. .....
Agency—Hugh H. Graham & Assoc., Inc.

Standard Electric Mfg. Co. 305
Agency—John P. Eldridge

Standard Metal Mfg. Co. 198

Stanhope, Inc., R. C. 309, 312

Star Expansion Products Co. 266

Stearns Manufacturing Co., Inc. 288
Agency—Beeson-Reichert, Inc.

Straub Mfg. Co. 40
Agency—Walter Monroe Co.

*Sturtevant Mill Co. 295
Agency—Sutherland-Abbott

Supremix, Inc. 235
Agency—Fred P. Bingham

*Syntron Co. 180

Taylor-Wharton Iron & Steel Co. 304
Agency—Thoma & Gill

Tennessee Coal, Iron & Railroad Co. 13, 214, 215
Agency—Batten, Barton, Durstine & Osborn

Texas Company 78
Agency—Erwin, Wasey & Co., Inc.

Thomas Foundries, Inc. 52
Agency—Silver & Douce Co.

Thew Shovel Co. 48
Agency—Hosler Adv., Inc.

Torrington Company 9
Agency—Hazard Advertising Co.

Tracto-Lift Company 238
Agency—Merritt Owens, Adv.

Transmission & Gear Co. 287
Agency—St. Clair Adv.

*Traylor Engrg. & Mfg. Co. 37
Agency—Kamp & Godfrey, Inc.

Trinity Portland Cement Co. 274
Agency—Hamilton Adv. Agcy., Inc.

Truck-Man Division of The Knickerbocker Co. 283
Agency—Fred P. Bingham

*Twin City Iron & Wire Co. 304

*Tyler Co., W. S. 192

Union Bag & Paper Corp. 11
Agency—Smith, Hagel & Snyder

U. S. Instrument Co. 298
Agency—Felt Adv., Inc.

United States Rubber Co. 291
Agency—Fletcher D. Richards, Inc.

*United States Steel Co. 13, 214, 215
Agency—Batten, Barton, Durstine & Osborn

*United States Steel Export Co. 13, 214, 215
Agency—Batten, Barton, Durstine & Osborn

Universal Concrete Machy. Co. 266
Agency—Byer & Bowman

Universal Door Carrier, Inc. 280
Agency—Jack A. Hunter, Adv.

*Universal Engineering Corp. 22
Agency—W. D. Lyon Co.

Universal Road Machinery Co. 304

*Universal Vibrating Screen Co. 190
Agency—Badger Adv. Service

Unverzagt & Sons, G. A. 310

Vento Steel Products Corp. 264
Agency—Baldwin, Bowers & Strachan, Inc.

Victor Engineering Co. 280
Agency—J. C. Smudin, Adv.

Weaver, Inc., M. O. 310

*Wellman Engineering Co. 299
Agency—Griswold-Eshleman Co.

*Western Precipitation Corp. 228
Agency—Dozier-Graham-Eastman Adv.

Whitcomb Locomotive Co. 304
Agency—Ketchum, MacLeod & Grove, Inc.

*Wickwire Spencer Steel Div. of The Colorado Fuel & Iron Corp. ... 232, 294
Agency—Doyle, Kitchen and McCormick, Inc.

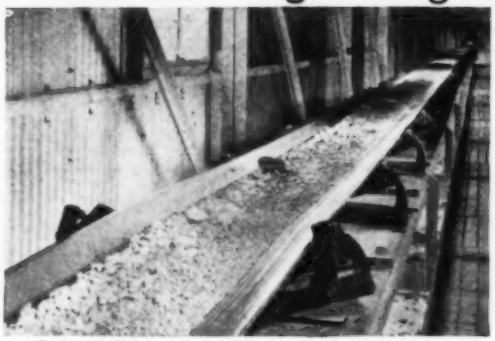
*Williams Patent Crusher & Pulv. Co. 14
Agency—Hebert-Robinson Adv.

Williams, Roger F. 282

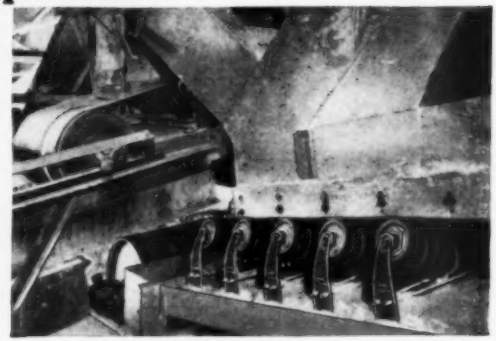
*Yuba Mfg. Co. 181
Agency—Geo. C. McNutt, Adv.

★See also Detailed Information in 1951 Pit and Quarry HANDBOOK

LINK-BELT engineering experience...

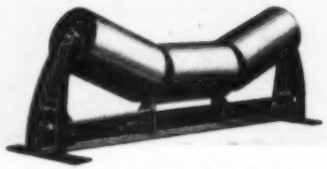


GYPSUM ROCK is carried at rate of 500 tph from ship's side to open yard storage by 30-inch Link-Belt Belt Conveyors.



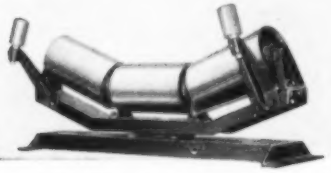
JUNCTION OF Link-Belt Belt Conveyors, showing rubber-tread impact idlers at loading points and welded steel foot pulleys.

Plus LINK-BELT quality components...



SERIES 100 TROUGHED BELT IDLERS. Strong, balanced integral rolls revolve on high-grade roller bearings, Grease-in, dirt-out seal, large reservoir preserve lubricant.

RUBBER-TREAD IMPACT IDLER for loading points protects the belt by absorbing the shock of heavy materials or lumps delivered from above.



BELT-TRAINING IDLER for automatic belt positioning. The actuating rolls respond to slightest contact — quickly recede and center the belt to minimize wear.

...add up to your best bet in

BELT CONVEYORS

WHAT'S your materials handling problem? Tonnage, distance or a combination of the two? Heavy or light materials? Large lumps or fines? Continuous or intermittent operation?

Whatever the conditions, you'll find the right answers at Link-Belt. For Link-Belt designs conveyor systems to meet your requirements. Backed by unmatched materials handling and power transmission experience, our conveyor specialists help you and your consultants get the right equipment in the right place.

One Source—One Responsibility

Link-Belt makes all the various elements — all types and sizes of idlers, takeups, pulleys, trippers, bearings and power transmission drives. Plus all related equipment — other types of conveyors, feeders, elevators, car dumpers and shakers.

And Link-Belt will build your supporting structures and enclosures . . . install the job completely. One source — one responsibility. Every detail receives the proper attention to assure you an efficient, trouble-free, long-life conveying system.

The next time you need belt conveyor engineering assistance, call the Link-Belt specialist in our office near you.

LINK-BELT

BELT CONVEYOR EQUIPMENT

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in principal cities. 12.350

These are Cleveland vertical units in a stone preparation plant. They drive a feeder table which transfers crushed stone from storage bins above to a conveyor belt, on the way to kilns for dead burning.

Trouble-free CLEVELANDS drive dolomite feeder

SERVING day-in, day-out, these Clevelands help to keep the steel mills running. They contribute to the manufacture of dead burned dolomite—a refractory material with which open hearth furnace bottoms are maintained.

In metal production and fabrication, as well as in the wide spread supporting industries like this one, there are thousands of Cleveland worm gear speed reducers and worm gear drives—many of them in operation thirty years and more.

Since 1912, Cleveland has concentrated its entire engineering and manufacturing effort on a single product—worm gearing. It has always emphasized the four basic factors of correct design, finest quality materials, up-to-date manufacturing facilities and precision workmanship. As a result, wherever industry needs dependable drives—drives that will operate continuously under heavy loads, for long periods of trouble-free service—there you're likely to find Clevelands at work.

In or near your city there's a Cleveland engineer ready to serve you. He will be glad to discuss your power transmission problems and suggest proper drives to meet your particular needs. The Cleveland Worm and Gear Company, 3280 East 80th Street, Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication.
In Canada: Peacock Brothers Limited.

CLEVELAND
Worm Gear
Speed Reducers

No other V-Belt matches Goodyear's Super-Rated HY-T

For Shock-Resistance
For Long Life
For Hard Work

NO other belt can match Goodyear's new HY-T Multi-V-Belt. Goodyear gives you a belt made with new chemically produced fiber that forms the load-carrying cords of these belts, provides greater strength and higher horsepower rating.

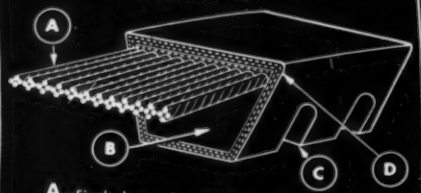
It has the strength of nylon—without its stretch. That means a super-rated V-Belt that will "soak up" the heaviest shock loads—last far longer than ordinary construction V-Belts even under extreme heavy-duty service.

Look at the charts here. See for yourself what HY-T Belts will do for you on your V-Drives. Then ask the G.T.M.—Goodyear Technical Man—about matched sets for your multi-drives. Or see your nearest Goodyear Industrial Rubber Products Distributor.

GOODYEAR INDUSTRIAL RUBBER PRODUCTS

GTM-Specified HY-T MULTI-V-BELT CONSTRUCTIONS

Compass Single-Layer Cord Construction (lengths up to 120")

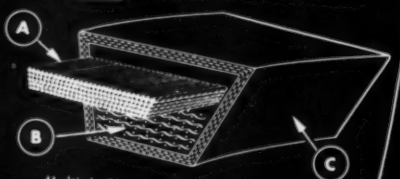


A—Single layer of special fiber cord in neutral plane carries the load, provides maximum strength, flexibility.

B—Cushion section of durable rubber.

C—Notches close rounding pulleys to provide positive grip on sheave, open between pulleys to ventilate rubber.

D—Abrasion-resistant cover of super-tough fabric, bias-cut for long wear. Oil- and mildew-resistant.



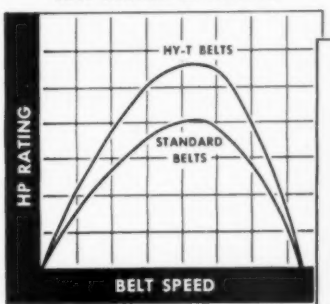
Multiple Ply Construction (standard lengths 120" and above)

A—Multi-plies of new fiber give maximum shock resistance.

B—Fabric-reinforced body minimizes vibration on longer drives.

C—Abrasion-resistant cover.

40% HIGHER HP RATING



FEWER BELTS REQUIRED

BELT COST PER RATED HP

*Includes Oil-Resistant construction at no extra cost

FOR HOSE, FLAT BELTS, V-BELTS, MOLDED GOODS, PACKING, TANK LINING, RUBBER-COVERED ROLLS built to the world's highest standard of quality, phone your nearest Goodyear Industrial Rubber Products Distributor.

HY-T, Compass—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

GOODYEAR

THE GREATEST NAME IN RUBBER